Approved By

Incident Commander: Long, David David Long

Incident Action Plan

Table of Contents

Incident Name: 2018 Superior Refinery Fire | Period: Period 8 [05/11/18 06:00 - 05/14/18 06:00]

Present Conditions

Weather Conditions as of 05/10/2018 16:39

superior, wi us station id: MID_KSUW

Humidity (%): 27	***Pressure:*** 30.06 psi
Wind Speed: 7 mph	***Dew Point:*** 22
Wind Direction (from): NNE	***Feels Like:*** 55
Temperature: 55 Fahrenheit	***UV Index:***
Visibility: 10 mile(s)	

Sunny

Forecast Date	*Wind*	*Temp High/Low*	*% Precip*	*Sunrise/ Sunset*	*Notes*
Thu 05/10/2018	7 mph N	56 F	9		Mostly Sunny
	5 mph NNE	33 F	3		Partly Cloudy
Fri 05/11/2018	8 mph ENE	52 F	3		Partly Cloudy
	3 mph ENE	34 F	6		Partly Cloudy
Sat 05/12/2018	5 mph N	62 F	6		Mostly Sunny
	4 mph E	36 F	1		Partly Cloudy
Sun 05/13/2018	7 mph SW	68 F	1		Mostly Sunny
	7 mph W	43 F	2		Mostly Clear
Mon 05/14/2018	8 mph W	76 F	2		Mostly Sunny
	5 mph W	45 F	2		Mostly Clear

Tides

Incident Map/Sketch

20180510_ImpactedArea.jpg

Incident Map/Sketch

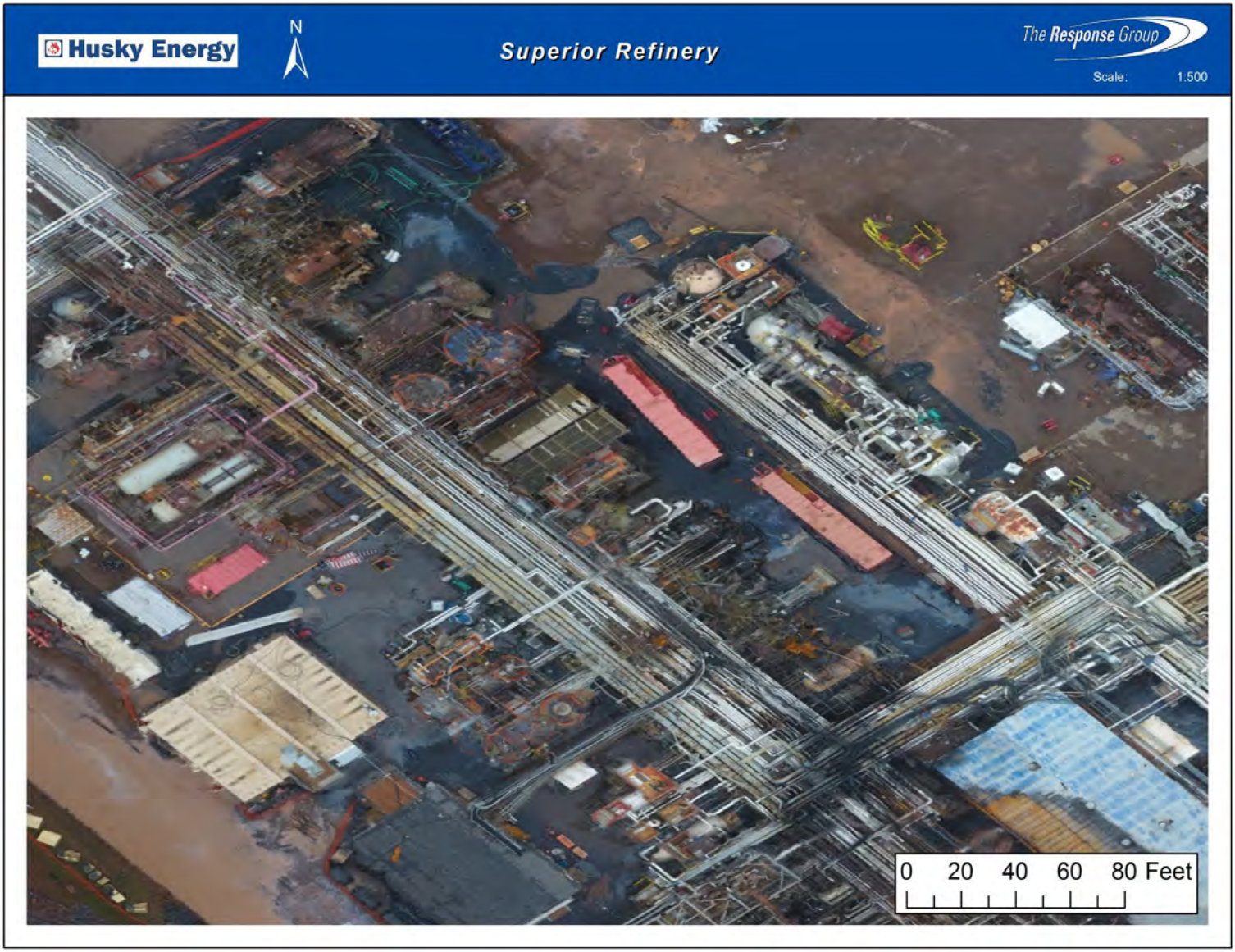
20180510ProcoessingPlantDroneImage.jpg

Incident Map/Sketch

20180510_NoEntryZone.jpg

Incident Map/Sketch

20180510_MapforCrane.jpg



Objective(s)
Ensure the Safety of the public and Refinery Personnel
Incident stabilization
Evidence Preservation
Minimize environmental impacts
Keep Stakeholders Informed of Response Activities
Monitor social and local media

Operational Period Command Emphasis (Safety Message, Priorities, Key Decisions/Directions)

Incident Action Plan Components			
[x]	IAP Cover Sheet	[x]	Weather Report
[x]	Map/Sketch	[x]	ICS 202 - Incident Objectives
[x]	ICS 202b - Critical Information Requirements	[x]	ICS 204 - Assignment List
[x]	ICS 205 - Radio Communications	[x]	ICS 205a - Communications List
[x]	ICS 206 - Medical Plan	[x]	ICS 207 - Organization Chart
[x]	ICS 208 - Site Safety Plan		

Incident Command - Critical Threshold Reporting Criteria

**** If any of these conditions are met, Incident Commander must be notified immediately ****

- Injury or Death (OSHA/1st Aid or greater through Safety Officer)
- Significant change of status of site conditions
- Public health impacts
- Impacted sensitive areas beyond protection/Any change to trajectories
- Loss of major tactical resources
- Unplanned VIP visits en-route/planning/arriving
- Adverse protest plans or interview requests
- Adverse political/influence
- Loss or breach of containment
- Any breach in safety/investigation zone
- Special requests from agencies
- Any changes to respiratory requirements (eg: SCBA)
- Any evidence wildlife impact
- Any exceedance of an air monitoring action level

Operations Personnel

Position	*Name*	*Affiliation*	*Contact Number(s)*	*Work Shift*
Operations Section Chief	Fredman, Peter	Husky Energy Inc.	320-288-6161	
Deputy Operations Section Chief	Schade, Kollin	Husky Energy Inc.	317-292-6594	
Stabilization Group Supervisor	Thom, Tim	Husky Energy Inc.	715-817-8016	
Flare Inerting Task Force Leader	Witherill, Troy	Husky Energy Inc.	218-522-0114	

Resources Required

Area Of Operation	*Resource Kind*	*Description*	*Quantity*	*Size*
Flare Inerting Task Force	Manpower: Responder	Day Shift Responders	2	
Flare Inerting Task Force	Miscellaneous	Nitrogen Bottles	27	
Flare Inerting Task Force	Miscellaneous	TMVU	2	

Assignments

Continue efforts to identify flare mechanical integrity weaknesses. Including piping, knockout vessels and flare.

Continue nitrogen blanketing and inerting of flare header.

Communications

Name / Function	*Contact Details*
ERT Channel	8
Channel 1 Talk Around	11
Primary	1
Secondary	2
Radio	3 to 7

Special Environmental Considerations

Actions shall be taken to minimize any release of hydrocarbons to the environment. Any liquid hydrocarbon release shall be cleaned up immediately and disposed of properly.
Notification of any venting/release of vapor/liquid hydrocarbon shall be made to the GHD air monitoring group immediately for consideration in air monitoring. Any liquid hydrocarbon release shall be cleaned up immediately.Actions shall be taken to minimize any release of hydrocarbons to the environment. Any liquid hydrocarbon release shall be cleaned up immediately and disposed of properly.
Notification of any venting/release of vapor/liquid hydrocarbon shall be made to the GHD air monitoring group immediately for consideration in air monitoring. Any liquid hydrocarbon release shall be cleaned up immediately.

Special Site-Specific Safety Considerations

If in Hot Zone, follow Hot Zone entry procedures.

If in Warm or Cold Zone, refinery PPE must be worn.

Hazard assessment must be done to plan safe work.

Be cognizant of the hazards of the products in the Flare, as well as nitrogen, fire, pyrophorics and similar hazards.

Emergency Alarm system will signal need to evacuate from the site.

Use flashlights, vehicle lights and other lighting during nighttime activities. If warranted, request light plants and other larger lighting.

For work in the hot zone or where damage has occurred to equipment, area must be assessed for asbestos and other hazardous materials by an Industrial Hygienist or Wisconsin Licensed Asbestos personnel prior to their work. Safe work permit request must include request for this determination. Any concerns found as part of this assessment must be addressed prior to any work being done.

Be aware of the potential for severe weather. The Shift Foreman will make an anouncement if there are special precautions or if there is a need to take shelter.

Additional Information

If impacted wildlife are observed. Do not approach or attempt to capture. Please contact Husky Hill Avenue guard shack at 715-398-8220 or 221

Operations Personnel

Position	*Name*	*Affiliation*	*Contact Number(s)*	*Work Shift*
Operations Section Chief	Fredman, Peter	Husky Energy Inc.	320-288-6161	
Deputy Operations Section Chief	Schade, Kollin	Husky Energy Inc.	317-292-6594	
Stabilization Group Supervisor	Thom, Tim	Husky Energy Inc.	715-817-8016	
De-Inventory Task Force	Laszewski, Aaron	Husky Energy Inc.	920-883-1992	
De-Inventory Task Force	Ivanca, Erin	Husky Energy Inc.	651-592-6339	
De-Inventory Task Force	Campbell, Adam	Husky Energy Inc.	218-491-4920	

Resources Required

Area Of Operation	*Resource Kind*	*Description*	*Quantity*	*Size*
De-Inventory Task Force	Manpower: Responder	Engineer	7	
De-Inventory Task Force	Manpower: Responder	Project Manager	1	
De-Inventory Task Force	Manpower: Responder	Project Control	1	
De-Inventory Task Force	Equipment: Safety	VCU	2	
De-Inventory Task Force	Manpower: Responder	Contractors	29	

Assignments

Continue to De-inventory the Benzout unit as per approved plan.

After de-inventory of Benzout unit conduct debrief with IC and section chiefs.

Continue to develop the hydrocarbon de-inventory plans for priority assets:
- Green Gas Unit
- FCC Gas con stripper
- FCC Gas con Debutanizer
- ISOM

SRS/Evergreen to assist with plan development

No operations on additional units until final approvals have been completed

Hydrocarbon de-inventory plan for each unit will be approved by the following:
- Incident Commander
- Operations Section Chief
- Planning Section Chief
- Environmental Unit Leader
- Safety Officer
- Lead Investigator

Communications

Name / Function	*Contact Details*
ERT Channel	8
Channel 1 Talk Around	11
Primary	1
Secondary	2
Radio	3 to 7

Special Environmental Considerations

Actions shall be taken to minimize any release of hydrocarbons to the environment. Any liquid hydrocarbon release shall be cleaned up immediately and disposed of properly.

Prior to commencing de-inventory activities, notify GHD so task specific monitoring can commence to verify site and public safety. Once de-inventory events commence, notification of any venting/release of vapor/liquid hydrocarbon to the environment shall be made to the GHD air monitoring group immediately for consideration in air monitoring.

Actions shall be taken to minimize any release of hydrocarbons to the environment. Any liquid hydrocarbon release shall be cleaned up immediately and disposed of properly.

Special Site-Specific Safety Considerations

Refer to individual De-inventory safety plans.

If in Hot Zone, follow Hot Zone entry procedures.

If in Warm or Cold Zone, refinery PPE must be worn.

Ensure that air monitoring, including 4-Gas and product specific (Benzene, Hydrogen Sulfide, etc.) is done during the de-inventory process.

Hazard assessment must be done to plan safe work.

Be cognizant of the hazards of the hazards of Nitrogen, unit contents including Benzene, H2S, petroleum products, etc.

Use flashlights, vehicle lights and other lighting during nighttime activities. If warranted, request light plants and other larger lighting.

For work in the hot zone or where damage has occurred to equipment, area must be assessed for asbestos and other hazardous materials by an Industrial Hygienist or Wisconsin Licensed Asbestos personnel prior to their work. Safe work permit request must include request for this determination. Any concerns found as part of this assessment must be addressed prior to any work being done.

Additional Information

If impacted wildlife are observed. Do not approach or attempt to capture. Please contact Husky Hill Avenue guard shack at 715-398-8220 or 221

Operations Personnel

Position	*Name*	*Affiliation*	*Contact Number(s)*	*Work Shift*
Operations Section Chief	Fredman, Peter	Husky Energy Inc.	320-288-6161	
Deputy Operations Section Chief	Schade, Kollin	Husky Energy Inc.	317-292-6594	
Stabilization Group Supervisor	Thom, Tim	Husky Energy Inc.	715-817-8016	
Reactor Task Force Leader	Witherill, Troy	Husky Energy Inc.	218-522-0114	

Resources Required

Area Of Operation	*Resource Kind*	*Description*	*Quantity*	*Size*
Reactor Task Force	Manpower: Responder	Day Shift Responders	3	
Reactor Task Force	Manpower: Responder	Night Shift Responders	2	
Reactor Task Force	Miscellaneous	Nitrogen Bottles	7	

Assignments

Maintain and document ongoing nitrogen blanket and inerting. 24hr operations. Report any loss of nitrogen blanket immediately to the Reactor Task Force Leader.

Communications

Name / Function	*Contact Details*
ERT Channel	8
Channel 1 Talk Around	11
Primary	1
Secondary	2
Radio	3 to 7

Special Environmental Considerations

Actions shall be taken to minimize any release of hydrocarbons to the environment. Any liquid hydrocarbon release shall be cleaned up immediately and disposed of properly.
Notification of any venting/release of vapor/liquid hydrocarbon shall be made to the GHD air monitoring group immediately for consideration in air monitoring. Any liquid hydrocarbon release shall be cleaned up immediately.Actions shall be taken to minimize any release of hydrocarbons to the environment. Any liquid hydrocarbon release shall be cleaned up immediately and disposed of properly.
Notification of any venting/release of vapor/liquid hydrocarbon shall be made to the GHD air monitoring group immediately for consideration in air monitoring. Any liquid hydrocarbon release shall be cleaned up immediately.

Special Site-Specific Safety Considerations

If in Hot Zone, follow Hot Zone entry procedures.

If in Warm or Cold Zone, refinery PPE must be worn.

Hazard assessment must be done to plan safe work.

Be cognizant of the hazards of the product in reactor as well as nitrogen, fire and similar hazards.

Use flashlights, vehicle lights and other lighting during nighttime activities. If warranted, request light plants and other larger lighting.

Emergency Alarm system will signal need to evacuate from the site.

For work in the hot zone or where damage has occurred to equipment, area must be assessed for asbestos and other hazardous materials by an Industrial Hygienist or Wisconsin Licensed Asbestos personnel prior to their work. Safe work permit request must include request for this determination. Any concerns found as part of this assessment must be addressed prior to any work being done.

Be aware of the potential for severe weather. The Shift Foreman will make an anouncement if there are special precautions or if there is a need to take shelter.

Additional Information

If impacted wildlife are observed. Do not approach or attempt to capture. Please contact Husky Hill Avenue guard shack at 715-398-8220 or 221

Operations Personnel

Position	Name	Affiliation	Contact Number(s)	Work Shift
Operations Section Chief	Fredman, Peter	Husky Energy Inc.	320-288-6161	
Deputy Operations Section Chief	Schade, Kollin	Husky Energy Inc.	317-292-6594	
Stabilization Group Supervisor	Thom, Tim	Husky Energy Inc.	715-817-8016	
Chemical Removal Task Force Leader	McCusker, Brian	Husky Energy Inc.	218-348-9769	

Resources Required

Area Of Operation	Resource Kind	Description	Quantity	Size
Chemical Removal Task Force	Manpower: Responder	Day Shift Responders	4	
Chemical Removal Task Force	Manpower: Responder	Night Shift Responders	1	

Assignments

Operations will:
- Continue HF air monitoring
- Maintain deluge system around HF tank
- Inventory chemical totes on-site
- Install fence around the HF acid storage tank
- Develop a plan to implement recomendations for security, inspection and leak detection concerning the HF Tank

No additional operations until final approvals have been received

Four (4) options continue to be developed in parallel by HF Alkylation Consultants and SPSI in order to evaluate and mitigate risk:
1) Neutralize on-site
2) Transfer to an off-site facility
3) Retain on-site with safeguards in place
4) Other safe management alternatives

Ammonia Removal Plan to be developed by Wenck & SRS/NRC

Communications

Name / Function	Contact Details
ERT Channel	8
Channel 1 Talk Around	11
Primary	1
Secondary	2
Radio	3 to 7

Special Equipment / Supplies Needed for Assignment

Fencing

Special Environmental Considerations

All precautions should be taken to minimize release of any chemical to the environment. If chemical is released the environmental unit leader shall be notified immediately.Actions shall be taken to minimize any release of hydrocarbons to the environment. Any liquid hydrocarbon release shall be cleaned up immediately and disposed of properly.
Notification of any venting/release of vapor/liquid hydrocarbon shall be made to the GHD air monitoring group immediately for consideration in air monitoring. Any liquid hydrocarbon release shall be cleaned up immediately.

Special Site-Specific Safety Considerations

If in Hot Zone, follow Hot Zone entry procedures.

In Alky Unit, fixed HF air monitors do not currently work. Rely on personal HF monitors and area monitors for determination of HF within the air.

In Alky Unit, fixed water cannons are not operational. If there is a potential for a leak of HF Acid, stage water nozzles and verify antiquate coverage of water spray to mitigate a release.

If in Warm or Cold Zone, refinery PPE must be worn except where HF Akly Gear is required and that must be worn.

Hazard assessment must be done to plan safe work.

Be cognizant of the hazards of the products being handled including hydrofluoric acid and other hazards of the Alkylation Unit.

Emergency Alarm system will signal need to evacuate from the site.

Use flashlights, vehicle lights and other lighting during nighttime activities. If warranted, request light plants and other larger lighting.

For work in the hot zone or where damage has occurred to equipment, area must be assessed for asbestos and other hazardous materials by an Industrial Hygienist or Wisconsin Licensed Asbestos personnel prior to their work. Safe work permit request must include request for this determination. Any concerns found as part of this assessment must be addressed prior to any work being done.

Be aware of the potential for severe weather. In the refinery, the Shift Foreman will make an anouncement on the plant radio system if there are special precautions or if there is a need to take shelter.

Additional Information

If impacted wildlife are observed. Do not approach or attempt to capture. Please contact Husky Hill Avenue guard shack at 715-398-8220 or 221

ICS 204 - Assignment List	Task Force: Energy Restoration Task Force
Incident Name: 2018 Superior Refinery Fire	Period: Period 8 [05/11/2018 06:00 - 05/14/2018 06:00]

Operations Personnel

Position	Name	Affiliation	Contact Number(s)	Work Shift
Operations Section Chief	Fredman, Peter	Husky Energy Inc.	320-288-6161	
Deputy Operations Section Chief	Schade, Kollin	Husky Energy Inc.	317-292-6594	
Mechanical Group Supervisor	Rikkola, Ken	Husky Energy Inc.	218-343-9538	
Energy Restoration Task Force Leader	Carlson, Brad	Husky Energy Inc.	218-390-5182	
Energy Restoration Task Force Leader	Massie, Nik	Husky Energy Inc.	715-817-1209	

Resources Required

Area Of Operation	Resource Kind	Description	Quantity	Size
Energy Restoration Task Force	Manpower: Responder	Electricians	7	
Energy Restoration Task Force	Supervisor	Supervisor	2	

Assignments

1) Submit plan for energizing the following areas:
- Ops locker room
- New crude control room
- "O" building
- Oil movements control room (Change house)
- Stinson avenue security station

2) Submit plan to disconnect high voltage to hot zone

Plans to be approved through normal refinery MOC process, Operations Section Chief and Incident Investigation Team (Shane Strang)

Communications

Name / Function	Contact Details
ERT Channel	8
Channel 1 Talk Around	11
Primary	1
Secondary	2
Radio	3 to 7

Special Environmental Considerations

Considerations of potential hydrocarbon release should be made prior to energizing hydrocarbon containing equipment or their control system in order to minimize the release of hydrocarbons.
Prior to energizing any CEM buildings all building analyzers and sampling equipment shall be turned off.Actions shall be taken to minimize any release of hydrocarbons to the environment. Any liquid hydrocarbon release shall be cleaned up immediately and disposed of properly.
Notification of any venting/release of vapor/liquid hydrocarbon shall be made to the GHD air monitoring group immediately for consideration in air monitoring. Any liquid hydrocarbon release shall be cleaned up immediately.

Special Site-Specific Safety Considerations

If in Hot Zone, follow Hot Zone entry procedures discussed in previous section.

If in Warm or Cold Zone, refinery PPE must be worn.

Hazard assessment must be done to plan safe work.

Follow Refinery Electrical Safety and Lockout Tagout programs.

Be aware of your sorroundings. There may be large equipment and overhead work in your area.

Be cognizant of downed power lines, overhead hazards and potential for unintentional energization of electrical equipment.

Wear PPE appropriate to the potential electrical energy.

Emergency Alarm system will signal need to evacuate from the site.

Use flashlights, vehicle lights and other lighting during nighttime activities. If warranted, request light plants and other larger lighting.

For work in the hot zone or where damage has occurred to equipment, area must be assessed for asbestos and other hazardous materials by an Industrial Hygienist or a Wisconsin Licensed Asbestos personnel prior to their work. Safe work permit request must include request for this determination. Any concerns found as part of this assessment must be addressed prior to any work being done.

Be aware of the potential for severe weather. In the refinery, the Shift Foreman will make an anouncement on the plant radio system if there are special precautions or if there is a need to take shelter.

Additional Information

If impacted wildlife are observed. Do not approach or attempt to capture. Please contact Husky Hill Avenue guard shack at 715-398-8220 or 221

Operations Personnel

Position	*Name*	*Affiliation*	*Contact Number(s)*	*Work Shift*
Operations Section Chief	Fredman, Peter	Husky Energy Inc.	320-288-6161	
Deputy Operations Section Chief	Schade, Kollin	Husky Energy Inc.	317-292-6594	
Mechanical Group Supervisor	Rikkola, Ken	Husky Energy Inc.	218-343-9538	
Control System Task Force Leader	Johnson, Joe	Husky Energy Inc.	651-307-7833	

Resources Required

Area Of Operation	*Resource Kind*	*Description*	*Quantity*	*Size*
Control System Task Force	Manpower: Responder	Electricians	1	
Control System Task Force	Manpower: Responder	Manpower: Responder	5	

Assignments

Develop a plan to remotely control the water cannons around the ALKY unit and restore access to video monitoring and alarm system.

Implement plan with OPS chief approval.

Special Site-Specific Safety Considerations

If in Hot Zone, follow Hot Zone entry procedures.

In Alky Unit, fixed HF air monitors do not currently work. Rely on personal HF monitors and area monitors for determination of HF within the air.

In Alky Unit, fixed water cannons are not operational. If there is a potential for a leak of HF Acid, stage water nozzles and verify antiquate coverage of water spray to mitigate a release.

If in Warm or Cold Zone, refinery PPE must be worn except where HF Akly Gear is required and that must be worn.

Hazard assessment must be done to plan safe work.

Be cognizant of the hazards of the products being handled including hydrofluoric acid and other hazards of the Alkylation Unit.

Emergency Alarm system will signal need to evacuate from the site.

Use flashlights, vehicle lights and other lighting during nighttime activities. If warranted, request light plants and other larger lighting.

For work in the hot zone or where damage has occurred to equipment, area must be assessed for asbestos and other hazardous materials by an Industrial Hygienist or Wisconsin Licensed Asbestos personnel prior to their work. Safe work permit request must include request for this determination. Any concerns found as part of this assessment must be addressed prior to any work being done.

Be aware of the potential for severe weather. In the refinery, the Shift Foreman will make an anouncement on the plant radio system if there are special precautions or if there is a need to take shelter.

Additional Information

If impacted wildlife are observed. Do not approach or attempt to capture. Please contact Husky Hill Avenue guard shack at 715-398-8220 or 221

Operations Personnel

Position	*Name*	*Affiliation*	*Contact Number(s)*	*Work Shift*
Operations Section Chief	Fredman, Peter	Husky Energy Inc.	320-288-6161	
Deputy Operations Section Chief	Schade, Kollin	Husky Energy Inc.	317-292-6594	
Mechanical Group Supervisor	Rikkola, Ken	Husky Energy Inc.	218-343-9538	
Waste Water Treatment Task Force Leader	Amato, Joe	Husky Energy Inc.	715-969-7724	

Resources Required

Area Of Operation	*Resource Kind*	*Description*	*Quantity*	*Size*
Waste Water Treatment Task Force	Manpower: Operator	WCS Operator	2	
Waste Water Treatment Task Force	Manpower: Operator	WWTP Operator	2	

Assignments

Continue circulation of waste water treatment plant.

Installation Granular Activated Carbon (GAC) unit on discharge of waste water treatment plant.

No discharge offsite prior to WDNR approval

Special Environmental Considerations

All WWTP permit limits will need to be achieved prior to discharge of any water off-site.Actions shall be taken to minimize any release of hydrocarbons to the environment. Any liquid hydrocarbon release shall be cleaned up immediately and disposed of properly.
Notification of any venting/release of vapor/liquid hydrocarbon shall be made to the GHD air monitoring group immediately for consideration in air monitoring. Any liquid hydrocarbon release shall be cleaned up immediately.

Special Site-Specific Safety Considerations

Hydrogen Sulfide may be higher than normal due to water not being processed.

Water on ground will make the work area slippery.

Potential for sludge cleanup. Wear refinery chemical gear.

Wear hearing protection in the nonoffice areas of WWTP.

Follow Husky Superior Electrical Safety SPI (procedure) for all electrical work.

Be aware of the potential for severe weather. In the refinery, the Shift Foreman will make an anouncement on the plant radio system if there are special precautions or if there is a need to take shelter.

Additional Information

If impacted wildlife are observed. Do not approach or attempt to capture. Please contact Husky Hill Avenue guard shack at 715-398-8220 or 221

Operations Personnel

Position	*Name*	*Affiliation*	*Contact Number(s)*	*Work Shift*
Operations Section Chief	Fredman, Peter	Husky Energy Inc.	320-288-6161	
Deputy Operations Section Chief	Schade, Kollin	Husky Energy Inc.	317-292-6594	
Mechanical Group Supervisor	Rikkola, Ken	Husky Energy Inc.	218-343-9538	
Asset Stabilization Task Force Leader	Rikkola, Ken	Husky Energy Inc.	218-343-9538	

Resources Required

Area Of Operation	*Resource Kind*	*Description*	*Quantity*	*Size*
Asset Stabilization Task Force	Manpower: Responder	Manpower: Responder	16	
Asset Stabilization Task Force	Equipment: Heavy	Crane	2	

Assignments

Primary asset of concern for asset stabilization: Stripper tower (15G-V10)

Actions for stripper tower stabilization:
- Operations to define process lines.
- Mobilize and spot the crane.
- Develop a detail sheer plan for piping connect to the stripper tower.
- Install rigging a top of stripper tower.

Finalize the Lifting and Stabilization Plan of Stripper Tower (15G-V10) to be reviewed and approved by:
- Operations Section Chief
- Planning Section Chief
- Safety Officer
- Incident Commander

Continue identifying other assets of concern including building integrity issues.

Communications

Name / Function	*Contact Details*
ERT Channel	8
Channel 1 Talk Around	11
Primary	1
Secondary	2
Radio	3 to 7

Special Environmental Considerations

Actions shall be taken to minimize any release of hydrocarbons to the environment. Any liquid hydrocarbon release shall be cleaned up immediately and disposed of properly.
Once stabilization events commence, notification of any venting/release of vapor/liquid hydrocarbon shall be made to the GHD air monitoring group immediately for consideration in air monitoring.Actions shall be taken to minimize any release of hydrocarbons to the environment. Any liquid hydrocarbon release shall be cleaned up immediately and disposed of properly. Notification of any venting/release of vapor/liquid hydrocarbon shall be made to the GHD air monitoring group immediately for consideration in air monitoring. Any liquid hydrocarbon release shall be cleaned up immediately.

Special Site-Specific Safety Considerations

All contractors must be preapproved by Refinery Safety Department.

If in Hot Zone, follow Hot Zone entry procedures discussed in previous section.

If in Warm or Cold Zone, refinery PPE must be worn.

Hazard assessment must be done to plan safe work.

Be cognizant of the hazards of the product in the vessel, fire and similar hazards.

Emergency Alarm system will signal need to evacuate from the site.

Use flashlights, vehicle lights and other lighting during nighttime activities. If warranted, request ligth plants and other larger lighting.

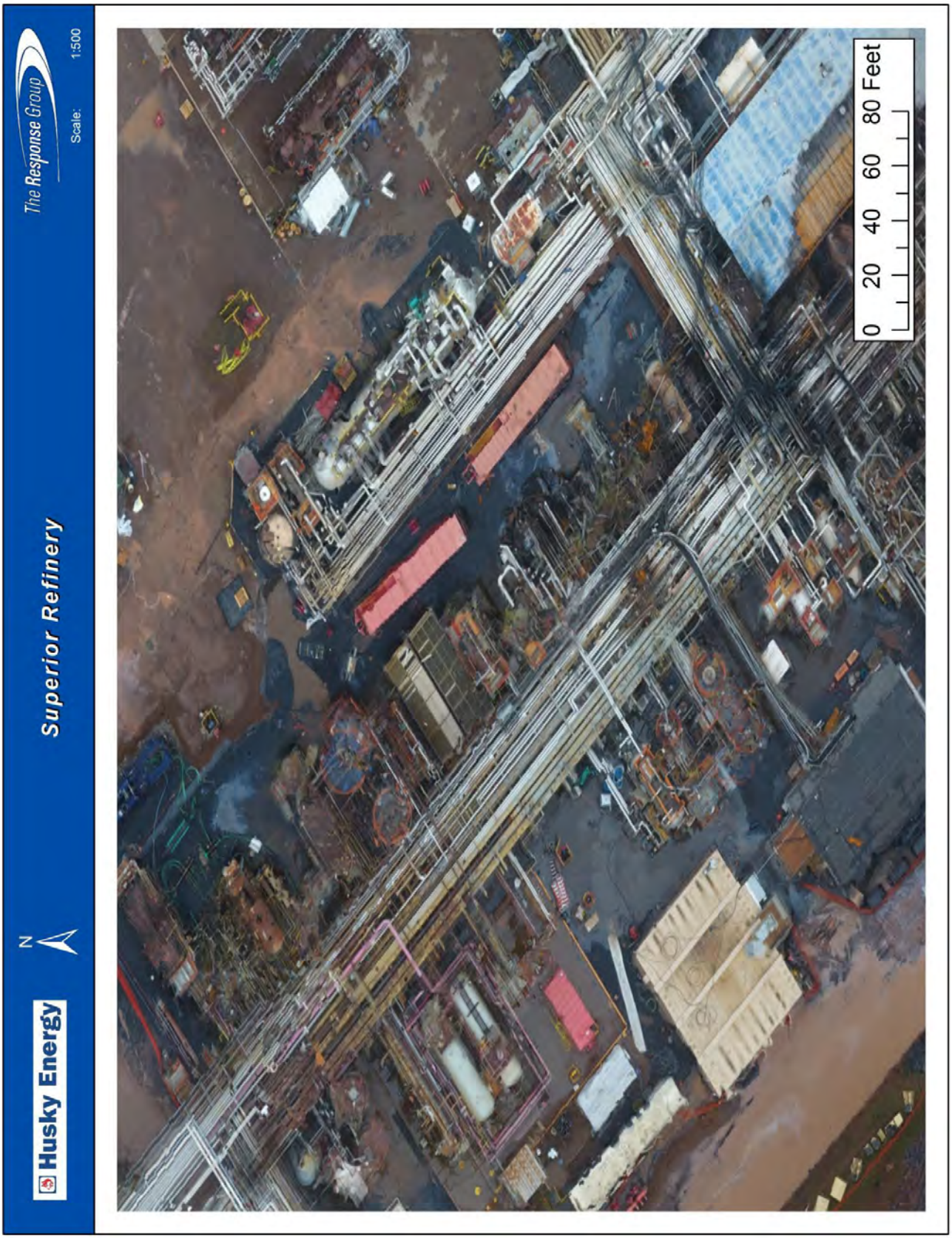
For work in the hot zone or where damage has occurred to equipment, area must be assessed for asbestos and other hazardous materials by an Industrial Hygienist or Wisconsin Licensed Asbestos personel prior to their work. Safe work permit request must include request for this determination. Any concerns found as part of this assessment must be addressed prior to any work being done.

Be aware of the potential for severe weather. In the refinery, the Shift Foreman will make an anouncement on the plant radio system if there are special precautions or if there is a need to take shelter.

Additional Information

If impacted wildlife are observed. Do not approach or attempt to capture. Please contact Husky Hill Avenue guard shack at 715-398-8220 or 221

20180510_MapforCrane.jpg



Operations Personnel

Position	*Name*	*Affiliation*	*Contact Number(s)*	*Work Shift*
Operations Section Chief	Fredman, Peter	Husky Energy Inc.	320-288-6161	
Deputy Operations Section Chief	Schade, Kollin	Husky Energy Inc.	317-292-6594	
Mechanical Group Supervisor	Rikkola, Ken	Husky Energy Inc.	218-343-9538	
Asphalt Removal Task Force Leader	Stokes, Dave	Stack Brothers Mechanical	218-221-6427	
Asphalt Removal Task Force Leader	Linge, Jeremy	Husky Energy Inc.		

Resources Required

Area Of Operation	*Resource Kind*	*Description*	*Quantity*	*Size*
Asphalt Removal Task Force	Manpower: Responder	Manpower: Responder	1	
Asphalt Removal Task Force	Front-end loader	Front-end loader	1	
Asphalt Removal Task Force	Manpower: Operator	Manpower: Operator	2	
Asphalt Removal Task Force	Roll Off Box	Roll Off Box	10	
Asphalt Removal Task Force	Vehicle	Roll Off Truck	2	
Asphalt Removal Task Force	Trackhoe	Trackhoe	1	

Assignments

Remove asphalt in priority areas as directed by operations and approved by Baker Risk

Asphalt removal will be done by equipment operators and laborers.
Asbestos workers will be on site during the process to watch for PACM.
- If Presumed Asbestos Containing Material (PACM) is identified the asbestos workers will implement “Asbestos Remediation Plan 2018 Superior Refinery Fire” that GHD produced
- If no PACM is identified the asphalt removal will proceed as a non-regulated site
Aerial mapping of progress is completed twice weekly. Updated maps will be provided by OSC.
Prioritize the removal areas on a map per operations

* Baker Risk needed for documentation and storage of evidence found

Special Environmental Considerations

Follow existing waste management plan and approved by applicable agencies. Actions shall be taken to minimize any release of hydrocarbons to the environment. Any hydrocarbon release shall be cleaned up immediately and disposed of properly. Notification of any hydrocarbon release shall be made to the GHD air monitoring group immediately for consideration in air monitoring.

Special Site-Specific Safety Considerations

If in Hot Zone, follow Hot Zone entry procedures.

If in Warm or Cold Zone, refinery PPE must be worn. In addition, Tingley or other chemical boots and leather gloves must be worn when there is a potential for contact with asphalt.

Hazard assessment must be done to plan safe work.

Any disturbance of Pressumed Asbestos Contatining Materials must be done by asbestos licensed personnel.

Be cognizant of the hazards of the areas that you are working in. Certain areas, such as the HF Unit, may require additional PPE.

Emergency Alarm system will signal need to evacuate from the site.

Use flashlights, vehicle lights and other lighting during nighttime activities. If warranted, request light plants and other larger lighting.

For work in the hot zone or where damage has occurred to equipment, area must be assessed for asbestos and other hazardous materials by an Industrial Hygienist or Wisconsin Licensed Asbestos personnel prior to their work. Safe work permit request must include request for this determination. Any concerns found as part of this assessment must be addressed prior to any work being done.

Be aware of the potential for severe weather. In the refinery, the Shift Foreman will make an anouncement on the plant radio system if there are special precautions or if there is a need to take shelter.

Additional Information

If impacted wildlife are observed. Do not approach or attempt to capture. Please contact Husky Hill Avenue guard shack at 715-398-8220 or 221

Operations Personnel

Position	Name	Affiliation	Contact Number(s)	Work Shift
Operations Section Chief	Fredman, Peter	Husky Energy Inc.	320-288-6161	
Deputy Operations Section Chief	Schade, Kollin	Husky Energy Inc.	317-292-6594	
Mechanical Group Supervisor	Rikkola, Ken	Husky Energy Inc.	218-343-9538	
Inspection Task Force Leader	Debevc, Ed	Husky Energy Inc.	250-961-2357	
Inspection Task Force Leader	Johnston, Gary	Husky Energy Inc.	715-817-1131	

Resources Required

Area Of Operation	Resource Kind	Description	Quantity	Size
Inspection Task Force	Manpower: Responder	Manpower: Responder	10	

Assignments

1) Primary focus on the Crude Vac unit addressing the following areas.

Mechanical Integrity
- SES to mobilize to site and develop heat maps of damaged areas
- Plan to Define damage areas in terms of heat and its impacts.
- Identify concrete integrity expert

Rotating Equipment
- Inspecting existing pump. Determine preliminary plan for addressing issues with pumps
- Assemble database and baseline information.

Electrical / Instrument
- Finalize the single line plot of electrical and instrumentation main distribution

Engineering Drawings
- Assemble engineering package

2) Conduct visual assessment of additional equipment outside the known event areas.

Special Site-Specific Safety Considerations

If in Hot Zone, follow Hot Zone entry procedures.

If in Warm or Cold Zone, refinery PPE must be worn.

Hazard assessment must be done to plan safe work.

Be cognizant of the hazards of the product in reactor as well as nitrogen, fire and similar hazards.

Use flashlights, vehicle lights and other lighting during nighttime activities. If warranted, request light plants and other larger lighting.

Emergency Alarm system will signal need to evacuate from the site. Secondary alarm is via the Channel 1 on plant radio.

For work in the hot zone or where damage has occurred to equipment, area must be assessed for asbestos and other hazardous materials by an Industrial Hygienist or Wisconsin Licensed Asbestos personnel prior to their work. Safe work permit request must include request for this determination. Any concerns found as part of this assessment must be addressed prior to any work being done.

Be aware of the potential for severe weather. The Shift Foreman will make an announcement if there are special precautions or if there is a need to take shelter.

Additional Information
If impacted wildlife are observed. Do not approach or attempt to capture. Please contact Husky Hill Avenue guard shack at 715-398-8220 or 221

ICS 204 - Assignment List	Task Force: Fire Pump Task Force
Incident Name: 2018 Superior Refinery Fire	Period: Period 8 [05/11/2018 06:00 - 05/14/2018 06:00]

Operations Personnel

Position	*Name*	*Affiliation*	*Contact Number(s)*	*Work Shift*
Operations Section Chief	Fredman, Peter	Husky Energy Inc.	320-288-6161	
Deputy Operations Section Chief	Schade, Kollin	Husky Energy Inc.	317-292-6594	
Emergency Response Group Supervisor	Quimby, Jerome	Husky Energy Inc.	218-428-5190	
Fire Pump Task Force Leader	Peterson, John	Husky Energy Inc.	218-428-6160	

Resources Required

Area Of Operation	*Resource Kind*	*Description*	*Quantity*	*Size*
Fire Pump Task Force	Manpower: Responder	Manpower: Responder	4	
Fire Pump Task Force	Pumps	Fire Pumps	4	

Assignments

Maintain operational readiness of fire water pumps. Report any issues to the Emergency Response Group Supervisor.

Communications

Name / Function	*Contact Details*
ERT Channel	8
Channel 1 Talk Around	11
Primary	1
Secondary	2
Radio	3 to 7

Special Environmental Considerations

Release of diesel fuel at the diesel fire water pumps shall be properly cleaned up immediately for proper disposal.Actions shall be taken to minimize any release of hydrocarbons to the environment. Any liquid hydrocarbon release shall be cleaned up immediately and disposed of properly.
Notification of any venting/release of vapor/liquid hydrocarbon shall be made to the GHD air monitoring group immediately for consideration in air monitoring. Any liquid hydrocarbon release shall be cleaned up immediately.

Special Site-Specific Safety Considerations

Refinery require FR clothing, Hard Hat, Safety Glasses and safety boots.

If in Diesel Pump building and pumps are running, hearing protection must be worn.

If working along the pond perimeter, a life jacket must be worn.

Emergency Alarm system will signal need to evacuate from the site.

Use flashlights, vehicle lights and other lighting during nighttime activities. If warranted, request light plants and other larger lighting.

Be aware of the potential for severe weather. In the refinery, the Shift Foreman will make an anouncement on the plant radio system if there are special precautions or if there is a need to take shelter.

Additional Information

If impacted wildlife are observed. Do not approach or attempt to capture. Please contact Husky Hill Avenue guard shack at 715-398-8220 or 221

Operations Personnel

Position	*Name*	*Affiliation*	*Contact Number(s)*	*Work Shift*
Operations Section Chief	Fredman, Peter	Husky Energy Inc.	320-288-6161	
Deputy Operations Section Chief	Schade, Kollin	Husky Energy Inc.	317-292-6594	
Emergency Response Group Supervisor	Quimby, Jerome	Husky Energy Inc.	218-428-5190	
ERT Task Force Leader	Hunker, Johnny	Husky Energy Inc.		
ERT Task Force Leader	VanHornweder, Brian	Husky Energy Inc.	218-428-5210	

Resources Required

Area Of Operation	*Resource Kind*	*Description*	*Quantity*	*Size*
ERT Task Force	Fire Fighting Foam	Fire Fighting Foam	1500	
ERT Task Force	Tanker Truck	Tanker Truck	1	
ERT Task Force	Foam pumper	Foam pumper	1	
ERT Task Force	Manpower: Responder	Manpower: Responder	20	

Assignments

Maintain 24hr readiness to respond to any incidents on-site. Follow guidelines as defined in existing Superior Refinery Emergency Response Plan.

Escort all approved individuals into the hot zone area as needed. All approvals to go through Maintenance Supervision.

Deploy and maintain fire response to support de-inventoring activities.

See attached map for warm and hot zone locations.

Equipment manager for ERT will ensure serviceability and organization of ERT building and equipment

Communications

Name / Function	*Contact Details*
ERT Channel	8
Channel 1 Talk Around	11
Primary	1
Secondary	2
Radio	3 to 7

Special Environmental Considerations

Actions shall be taken to minimize any release of hydrocarbons to the environment. Any liquid hydrocarbon release shall be cleaned up immediately and disposed of properly.
Notification of any venting/release of vapor/liquid hydrocarbon shall be made to the GHD air monitoring group immediately for consideration in air monitoring. Any liquid hydrocarbon release shall be cleaned up immediately.

Special Site-Specific Safety Considerations

If in Hot Zone, follow Hot Zone entry procedures discussed in previous section.

If in Warm or Cold Zone, refinery PPE must be worn.

Emergency Alarm system will signal need to evacuate from the site.

Use flashlights, vehicle lights and other lighting during nighttime activities. If warranted, request light plants and other larger lighting.

For work in the hot zone or where damage has occurred to equipment, area must be assessed for asbestos and other hazardous materials by an Industrial Hygienist or Wisconsin licensed asbestos personnel prior to their work. Safe work permit request must include request for this determination. Any concerns found as part of this assessment must be addressed prior to any work being done.

Be aware of the potential for severe weather. In the refinery, the Shift Foreman will make an anouncement on the plant radio system if there are special precautions or if there is a need to take shelter.

Additional Information

If impacted wildlife are observed. Do not approach or attempt to capture. Please contact Husky Hill Avenue guard shack at 715-398-8220 or 221

20180510_NoEntryZone.jpg

ICS 204 - Assignment List	Task Force: Air Monitoring Task Force
Incident Name: 2018 Superior Refinery Fire	Period: Period 8 [05/11/2018 06:00 - 05/14/2018 06:00]

Operations Personnel

Position	*Name*	*Affiliation*	*Contact Number(s)*	*Work Shift*
Operations Section Chief	Fredman, Peter	Husky Energy Inc.	320-288-6161	
Deputy Operations Section Chief	Schade, Kollin	Husky Energy Inc.	317-292-6594	
Environmental Monitoring Group Supervisor	Beattie, Dave	Husky Energy Inc.	218-348-9051	
Air Monitoring Task Force Leader	Armes, Will	GHD	519-497-8054	

Resources Required

Area Of Operation	*Resource Kind*	*Description*	*Quantity*	*Size*
Air Monitoring Task Force	Equipment: Air Monitoring	AreaRaes	32	
Air Monitoring Task Force	Equipment: Air Monitoring	MultiRaes	10	
Air Monitoring Task Force	Equipment: Air Monitoring	UltraRaes	10	
Air Monitoring Task Force	Equipment: Air Monitoring	Dust Track	10	
Air Monitoring Task Force	Manpower: Operator	Air Monitoring Supervisors	2	
Air Monitoring Task Force	Manpower: Responder	Industrial Hygienist	25	

Assignments

1. Continue to maintain a fixed perimeter air monitoring system that has been deployed to the area currently delineated as the hot zone. This monitoring will be conducted in accordance with the Site action levels described in the Air Monitoring Plan

2. Continue to maintain a fixed perimeter air monitoring system that has deployed to the perimeter of the refinery process area at or near the fenceline. This monitoring will be used to provide information regarding air quality in close proximity to potential sources of emissions of COI during the cleanup and recovery phases of the project.

3. Mobile community monitoring teams will continue to conduct monitoring in the area outside the facility, with a focus on downwind monitoring, while the cleanup and recovery phases of the project are ongoing.

Communications

Name / Function	*Contact Details*
ERT Channel	8
Channel 1 Talk Around	11
Primary	1
Secondary	2
Radio	3 to 7

Special Environmental Considerations

Actions shall be taken to minimize any release of hydrocarbons to the environment. Any liquid hydrocarbon release shall be cleaned up immediately and disposed of properly.
Notification of any venting/release of vapor/liquid hydrocarbon shall be made to the GHD air monitoring group immediately for consideration in air monitoring. Any liquid hydrocarbon release shall be cleaned up immediately.

Special Site-Specific Safety Considerations

If in Hot Zone, must follow Hot Zone Procedures including Bunker Gear, ERT escort, 4-Gas Monitor and sign in at ERT Response Center.

All other areas in the refinery require FR clothing, Hard Hat, Safety Glasses and safety boots.

If working along the perimeter fence or other Husky property outside of refinery, contact security guards at 715-398-8220 to make them aware of your presence. Otherwise, the police will be called.

When working along the refinery perimeter, be cognizant of slip, trip and fall hazards.

Use flashlights, vehicle lights and other lighting during nighttime activities. If warranted, request light plants and other larger lighting.

Emergency Alarm system will signal need to evacuate from the site.

When leaving vegetated areas outside of refinery, visually inspect clothing and skin for ticks.

For work in the hot zone or where damage has occurred to equipment, area must be assessed for asbestos and other hazardous materials by an Industrial Hygienist or Wisconsin Licensed Asbestos personnel prior to their work. Safe work permit request must include request for this determination. Any concerns found as part of this assessment must be addressed prior to any work being done.

Be aware of the potential for severe weather. In the refinery, the Shift Foreman will make an anouncement on the plant radio system if there are special precautions or if there is a need to take shelter.

Additional Information

If impacted wildlife are observed. Do not approach or attempt to capture. Please contact Husky Hill Avenue guard shack at 715-398-8220 or 221

20180510_AirMonitoring Stations.jpg

ICS 204 - Assignment List	Task Force: Water Sampling Task Force
Incident Name: 2018 Superior Refinery Fire	Period: Period 8 [05/11/2018 06:00 - 05/14/2018 06:00]

Operations Personnel

Position	Name	Affiliation	Contact Number(s)	Work Shift
Operations Section Chief	Fredman, Peter	Husky Energy Inc.	320-288-6161	
Deputy Operations Section Chief	Schade, Kollin	Husky Energy Inc.	317-292-6594	
Environmental Monitoring Group Supervisor	Beattie, Dave	Husky Energy Inc.	218-348-9051	
Water Sampling Task Force Leader	Turner, Matt	Husky Energy Inc.	715-969-4873	

Resources Required

Area Of Operation	Resource Kind	Description	Quantity	Size
Water Sampling Task Force	Miscellaneous	Long-Handled Surface water Sampler	4	
Water Sampling Task Force	Miscellaneous	Lab Sample Containers	24	
Water Sampling Task Force	Miscellaneous	Water-Proof Shipping Containers	4	
Water Sampling Task Force	Manpower: Responder	Water Sampling Techs	3	

Assignments

Water sampling to be conducted every other day as directed by the Water Sampling Task Force Leader. When sampling occurs, the following will take place:

1. Continue to collect water samples at designated sites utilizing appropiate water sampling equipment and techniques.

2. Sample at Five (5) pre-determined locations at Newton Creek and two (2) sample sites within refinery (Pond 2/3 & 4)

3. Package and arrange water samples for delivery to selected labs for analysis.

4. Report findings to EUL and GHD.

Communications

Name / Function	Contact Details
ERT Channel	8
Channel 1 Talk Around	11
Primary	1
Secondary	2
Radio	3 to 7

Special Environmental Considerations

Follow existing water sampling plan developed by GHD and approved by applicable agencies. All precautions should be taken to ensure proper sampling and handling. Actions shall be taken to minimize any release of hydrocarbons to the environment. Any liquid hydrocarbon release shall be cleaned up immediately and disposed of properly.
Notification of any venting/release of vapor/liquid hydrocarbon shall be made to the GHD air monitoring group immediately for consideration in air monitoring. Any liquid hydrocarbon release shall be cleaned up immediately.

Special Site-Specific Safety Considerations

Please refer to GHD Health and Safety Plan for water sampling.

Emergency Alarm system will signal need to evacuate from the site.

Use flashlights, vehicle lights and other lighting during nighttime activities. If warrented, request ligth plants and other larger lighting.

Life jackets are required when working over water. Life jackets are available in the Warehouse.

For work in the hot zone or where damage has occurred to equipment, area must be assessed for asbestos and other hazardous materials by an Industrial Hygienist or Wisconsin Licensed Asbestos personel prior to their work. Safe work permit request must include request for this determination. Any concerns found as part of this assessment must be addressed prior to any work being done.

Be aware of the potential for severe weather. In the refinery, the Shift Foreman will make an anouncement on the plant radio system if there are special precautions or if there is a need to take shelter.

Additional Information

If impacted wildlife are observed. Do not approach or attempt to capture. Please contact Husky Hill Avenue guard shack at 715-398-8220 or 221

20180510_watersamplingsites_NoDate.jpg

Operations Personnel

Position	*Name*	*Affiliation*	*Contact Number(s)*	*Work Shift*
Operations Section Chief	Fredman, Peter	Husky Energy Inc.	320-288-6161	
Deputy Operations Section Chief	Schade, Kollin	Husky Energy Inc.	317-292-6594	
Environmental Monitoring Group Supervisor	Beattie, Dave	Husky Energy Inc.	218-348-9051	
IH Monitoring Task Force Supervisor	Hale, Monica	Husky Energy Inc.	419-303-7704	

Resources Required

Area Of Operation	*Resource Kind*	*Description*	*Quantity*	*Size*
IH Monitoring Task Force	Manpower: Responder	Industrial Hygienist	2	
IH Monitoring Task Force	Pumps	Sampling Pumps	5	
IH Monitoring Task Force	Manpower: Responder	Asbestos Contractors	12	

Assignments

Continue asbestos monitoring on-site as directed by approved Asbestos Plan

Personal monitoring for air contaminants. (VOC, Asbestos)

Provide asbestos hazard support to ERT and on-site operations within the hot zone or other areas where insulation is damaged.

Communications

Name / Function	*Contact Details*
ERT Channel	8
Channel 1 Talk Around	11
Primary	1
Secondary	2
Radio	3 to 7

Special Environmental Considerations

Debris shall be assumed to be asbestos containing unless testing or other means of identification confirms otherwise. Actions shall be taken to minimize any release of presumed asbestos containing materials (PACM) to the environment. Any PACM disturbance/release/exposure shall be mitigated or cleaned up immediately and disposed of properly.
Notification of any PACM activites shall be made to the GHD IH air monitoring group immediately for evaluation, mitigation and/or exclusion.

Special Site-Specific Safety Considerations

If in Hot Zone, must follow Hot Zone Procedures including Bunker Gear, ERT escort, 4-Gas Monitor and sign in at ERT Response Center.

All other areas in the refinery require FR clothing, Hard Hat, Safety Glasses and safety boots.

If working along the perimeter fence or other Husky property outside of refinery, contact security guards at 715-398-8220 to make them aware of your presence. Otherwise, the police will be called.

When in the refinery, be cognizant of hazards associated with a fire zone.

When working along the refinery perimeter, be cognizant of slip, trip and fall hazards.

Use flashlights, vehicle lights and other lighting during nighttime activities. If warranted, request light plants and other larger lighting.

Emergency Alarm system will signal need to evacuate from the site.

For work in the hot zone or where damage has occurred to equipment, area must be assessed for asbestos and other hazardous materials by an Industrial Hygienist or Wisconsin Licensed Asbestos personnel prior to their work. Safe work permit request must include request for this determination. Any concerns found as part of this assessment must be addressed prior to any work being done.

Be aware of the potential for severe weather. In the refinery, the Shift Foreman will make an anouncement on the plant radio system if there are special precautions or if there is a need to take shelter.

Additional Information

If impacted wildlife are observed. Do not approach or attempt to capture. Please contact Husky Hill Avenue guard shack at 715-398-8220 or 221

Operations Personnel

Position	*Name*	*Affiliation*	*Contact Number(s)*	*Work Shift*
Operations Section Chief	Fredman, Peter	Husky Energy Inc.	320-288-6161	
Deputy Operations Section Chief	Schade, Kollin	Husky Energy Inc.	317-292-6594	
Environmental Monitoring Group Supervisor	Beattie, Dave	Husky Energy Inc.	218-348-9051	
Environmental Support Task Force Leader	Turner, Matt	Husky Energy Inc.	715-969-4873	

Resources Required

Area Of Operation	*Resource Kind*	*Description*	*Quantity*	*Size*
Environmental Support Task Force	Manpower: Responder	Manpower: Responder	3	
Environmental Support Task Force	Boom	Boom	400	
Environmental Support Task Force	Sorbent: Boom	Sorbent: Boom	400	
Environmental Support Task Force	Vehicle	Vehicle	4	
Environmental Support Task Force	Vacuum Truck	Vacuum Truck	1	
Environmental Support Task Force	Manpower: Operator	Vac Truck Operators	2	
Environmental Support Task Force	Manpower: Operator	Operator	1	
Environmental Support Task Force	Excavator	Mini Excavator	1	

Assignments

Boom Maintenance:
The team will travel to the current boom sites along Newton Creek to assess the condition of the boom. The morning crew will replace all absorbent boom that appears to have petroleum contamination. Any containment boom that is compromised will be put into 55 gallon steel drums that are labeled with a non-hazardous waste label filled in with "Oily Absorbent Booms". Full drums will be brought to the 90 day storage building. Pictures of each boom site should be taken both before and after any upkeep for documentation. Report to acting shift foreman for any additional work he may have for them.

Escort Surface Water Sampling teams:
The team will provide escort inside the facility to ponds 2,3 & 4 to conduct surface water samples.

Respond to any immediate actions, environmental concerns. (ie: Cleanup of contaminants at boom locations, address contamination issues at stinson avenue) as directed by Environmental Support Task Force Leader

Communications

Name / Function	*Contact Details*
Primary	1
Secondary	2
Radio	3 to 7
ERT Channel	8
Channel 1 Talk Around	11
Channel 2 Talk Around	12

Special Equipment / Supplies Needed for Assignment

Steel Drums, wheelbarrow

Special Environmental Considerations

Presence of sheen/oil at any location shall be relayed to the boom maintenance task force leader. Actions shall be taken to minimize any release of hydrocarbons to the environment. Any liquid hydrocarbon release shall be cleaned up immediately and disposed of properly.

Notification of any venting/release of vapor/liquid hydrocarbon shall be made to the GHD air monitoring group immediately for consideration in air monitoring. Any liquid hydrocarbon release shall be cleaned up immediately.

Special Site-Specific Safety Considerations

Be aware of slipping hazards on sides of banks of creek and other areas.

When work involves roadways, utilize Hi Viz vest.

Wear a life jacket when working in areas of deeper water. Consider slipping hazards and what might happen if you were to slip into creek while deploying boom or into pond while sampling.

Be cognizant of the products being handled.

Utilize proper lifting techniques and utilize mechanical lifting techniques on heavy boom or other objects.

Inspect for ticks when traveling in grassy or wooded areas.

Use flashlights, vehicle lights and other lighting during nighttime activities. If warranted, request light plants and other larger lighting.

For work in the hot zone or where damage has occurred to equipment, area must be assessed for asbestos and other hazardous materials by an Industrial Hygienist or Wisconsin Licensed Asbestos personnel prior to their work. Safe work permit request must include request for this determination. Any concerns found as part of this assessment must be addressed prior to any work being done.

Additional Information

If impacted wildlife are observed. Do not approach or attempt to capture. Please contact Husky Hill Avenue guard shack at 715-398-8220 or 221

Operations Personnel

Position	*Name*	*Affiliation*	*Contact Number(s)*	*Work Shift*
Operations Section Chief	Fredman, Peter	Husky Energy Inc.	320-288-6161	
Deputy Operations Section Chief	Schade, Kollin	Husky Energy Inc.	317-292-6594	
Environmental Monitoring Group Supervisor	Beattie, Dave	Husky Energy Inc.	218-348-9051	
Oil Recovery Task Force Leader	Turner, Matt	Husky Energy Inc.	715-969-4873	

Resources Required

Area Of Operation	*Resource Kind*	*Description*	*Quantity*	*Size*
Oil Recovery Task Force	Boom	Boom	200	
Oil Recovery Task Force	Sorbent: Boom	Sorbent: Boom	200	
Oil Recovery Task Force	Frac Tank	Frac Tank	2	
Oil Recovery Task Force	Vacuum Truck	Vacuum Truck	2	
Oil Recovery Task Force	Manpower: Operator	Vac Truck Operators	4	

Assignments

Continue the recovery of oil within containment area of tank 54 and adjacent containments using vac trucks, steam coiled frac tanks and waste water treatment plant.

Maintain wildlife fencing around impacted asphalt tank farm including Tank 54.

Special Environmental Considerations

Actions shall be taken to minimize any release of hydrocarbons to the environment. Any liquid hydrocarbon release shall be cleaned up immediately and disposed of properly.
Notification of any venting/release of vapor/liquid hydrocarbon shall be made to the GHD air monitoring group immediately for consideration in air monitoring. Any liquid hydrocarbon release shall be cleaned up immediately.

Special Site-Specific Safety Considerations

Hydrogen Sulfide gas may be present. Pay attention to H2S air monitors and evacuate if exposure is 10 PPM or greater.

Verify that prior product held is compatible with 6 Oil, Therminol, or any other product that might be found in the diked area.

Avoid potential creation of static electricity by provide grounding and/or bonding as necessary.

Be cognizant of slip, trip and fall hazards.

Use flashlights, vehicle lights and other lighting during nighttime activities. If warranted, request light plants and other larger lighting.

For work in the hot zone or where damage has occurred to equipment, area must be assessed for asbestos and other hazardous materials by an Industrial Hygienist or Wisconsin Licensed Asbestos personnel prior to their work. Safe work permit request must include request for this determination. Any concerns found as part of this assessment must be addressed prior to any work being done.

Additional Information

If impacted wildlife are observed. Do not approach or attempt to capture. Please contact Husky Hill Avenue guard shack at 715-398-8220 or 221

Operations Personnel

Position	*Name*	*Affiliation*	*Contact Number(s)*	*Work Shift*
Operations Section Chief	Fredman, Peter	Husky Energy Inc.	320-288-6161	
Deputy Operations Section Chief	Schade, Kollin	Husky Energy Inc.	317-292-6594	
Environmental Monitoring Group Supervisor	Beattie, Dave	Husky Energy Inc.	218-348-9051	
Wildlife Task Force Leader	Battaglia, Chris	Focus Wildlife	310-386-5965	
Wildlife Task Force Leader	Studer, Aaron	Husky Energy Inc.	780-205-5129	

Resources Required

Area Of Operation	*Resource Kind*	*Description*	*Quantity*	*Size*
Wildlife Task Force	Manpower: Responder	Manpower: Responder	3	
Wildlife Task Force	Small Boat	Small Boat	1	
Wildlife Task Force	Boat Operator	Boat Operator	2	
Wildlife Task Force	Vehicle	Sand Truck	1	
Wildlife Task Force	Manpower: Operator	Sand Truck Operator	2	

Assignments

Minimize access to asphalt tank farm by installing fencing (chain link & silt fence), continue to clean up and maintain penant & mylar flagging around all of the asphalt and 6 oil containment area.

Implement canadian goose nest and egg depredation as defined in the wildlife plan.

Implement active wildlife hazing as appropriate.

Remove all impacted cat tails around the edge of the impoundment area.

Continuous active monitoring of wildlife on-site and off-site around the facility

Contingent on approval from CSB & OSHA:
Begin applying sand to the asphalt and 6 oil release areas to separate released materials from contact with wildlife.

All operations should be in accordance with the approved Wildlife Plan.

Special Equipment / Supplies Needed for Assignment

100yd sand
Pre-sectioned mobile fencing
PFD
Flagging material

Special Environmental Considerations

Follow existing wildlife management plan and approved by applicable agencies. Actions shall be taken to minimize any impact to wildlife. Notification to the Wildlife Group and Environmenal Unit Leader of any identified impacts to wildlife (terestrial, aquatic, avian). Additionally, notification of any hydrocarbon release shall be made to the GHD air monitoring group immediately for consideration in air monitoring.

Special Site-Specific Safety Considerations

Wear Refinery PPE including FR clothing, Hard Hat, Safety Glasses and safety boots.

Be cognizant of the hazards of the products being handled.

If working along the permiter fence or other Husky property outside of refinery, contact security guards at 715-398-8220 to make them aware of your presence. Otherwise, the police will be called.

When working along the refinery perimeter, be cognizant of slip, trip and fall hazards.

Use flashlights, vehicle lights and other lighting during nighttime activities. If warranted, request light plants and other larger lighting.

Emergency Alarm system will signal need to evacuate from the site.

For work in the hot zone or where damage has occurred to equipment, area must be assessed for asbestos and other hazardous materials by an Industrial Hygienist or Wisconsin Licensed Asbestos personnel prior to their work. Safe work permit request must include request for this determination. Any concerns found as part of this assessment must be addressed prior to any work being done.

Be sure to wear a life jacket when working over water. Life jackets are available in the Warehouse.

Inspect for ticks when traveling in grassy or wooded areas.

Be aware of the potential for severe weather. In the refinery, the Shift Foreman will make an anouncement on the plant radio system if there are special precautions or if there is a need to take shelter.

Additional Information

If impacted wildlife are observed. Do not approach or attempt to capture. Please contact Husky Hill Avenue guard shack at 715-398-8220 or 221

Operations Personnel

Position	*Name*	*Affiliation*	*Contact Number(s)*	*Work Shift*
Operations Section Chief	Fredman, Peter	Husky Energy Inc.	320-288-6161	
Deputy Operations Section Chief	Schade, Kollin	Husky Energy Inc.	317-292-6594	
Environmental Monitoring Group Supervisor	Beattie, Dave	Husky Energy Inc.	218-348-9051	
Waste Management Task Force Leader	Turner, Matt	Husky Energy Inc.	715-969-4873	

Resources Required

Area Of Operation	*Resource Kind*	*Description*	*Quantity*	*Size*
Waste Management Task Force	Manpower: Responder	Manpower: Responder	2	
Waste Management Task Force	Dump Truck	Dump Truck	5	
Waste Management Task Force	Manpower: Responder	Spotter	1	
Waste Management Task Force	Manpower: Operator	Operator	1	
Waste Management Task Force	Front-end loader	Front-end loader	1	

Assignments

Contingent on Baker Risk clearance on a per site basis:

Dispose of asphalt removed by the Asphalt Removal Task Force.

Movement of disposal equipment should be directed by Asphalt Removal Task Force Leader

All operations to follow the approved Asbestos and Waste Management Plans

Special Environmental Considerations

Follow existing waste management plan and approved by applicable agencies. Actions shall be taken to minimize any release of hydrocarbons to the environment. Any hydrocarbon release shall be cleaned up immediately and disposed of properly. Notification of any hydrocarbon release shall be made to the GHD air monitoring group immediately for consideration in air monitoring.

Special Site-Specific Safety Considerations

If in Hot Zone, follow Hot Zone entry procedures.

If in Warm or Cold Zone, refinery PPE must be worn.

Hazard assessment must be done to plan safe work.

Be cognizant of the hazards of the products being handled.

Use flashlights, vehicle lights and other lighting during nighttime activities. If warranted, request light plants and other larger lighting.

Emergency Alarm system will signal need to evacuate from the site.

For work in the hot zone or where damage has occurred to equipment, area must be assessed for asbestos and other hazardous materials by an Industrial Hygienist or Wisconsin Licensed Asbestos personnel prior to their work. Safe work permit request must include request for this determination. Any concerns found as part of this assessment must be addressed prior to any work being done.

Be aware of the potential for severe weather. In the refinery, the Shift Foreman will make an anouncement on the plant radio system if there are special precautions or if there is a need to take shelter.

Additional Information

If impacted wildlife are observed. Do not approach or attempt to capture. Please contact Husky Hill Avenue guard shack at 715-398-8220 or 221

Operations Personnel

Position	*Name*	*Affiliation*	*Contact Number(s)*	*Work Shift*
Operations Section Chief	Fredman, Peter	Husky Energy Inc.	320-288-6161	
Deputy Operations Section Chief	Schade, Kollin	Husky Energy Inc.	317-292-6594	
Security Task Force Leader	Brager, Lynn	Securitas	715-398-8220	

Resources Required

Area Of Operation	*Resource Kind*	*Description*	*Quantity*	*Size*
Security Task Force	Manpower: Responder	Manpower: Responder	18	
Security Task Force	Vehicle	Security Vehicle	4	

Assignments

Securitas to maintain 24hr security checkpoints at road blocks, command post and control sites. Roving security to patrol between sites and to additional locations as requested.

Security to reference list of (Non-Husky) individuals approved for access.

Sites:
- Road block at Stinson/Hill
- Road block at Stinson/Bardon
- Hill/Stinson Guard Shack

Removal roadblocks contingent upon cleanup of Stinson Avenue and asphalt loading area

Confirmation to be provided the Environmental Monitoring Group Supervisor

Communications

Name / Function	*Contact Details*
ERT Channel	8
Channel 1 Talk Around	11
Primary	1
Secondary	2
Radio	3 to 7

Special Environmental Considerations

Immediate notification of a breach in the security of the site should be reported through the ICS system to mitigate the potential for a release of hydrocarbon to the environment.Actions shall be taken to minimize any release of hydrocarbons to the environment. Any liquid hydrocarbon release shall be cleaned up immediately and disposed of properly.
Notification of any venting/release of vapor/liquid hydrocarbon shall be made to the GHD air monitoring group immediately for consideration in air monitoring. Any liquid hydrocarbon release shall be cleaned up immediately.

Special Site-Specific Safety Considerations

Any work on roadways requires a high visibility vest.

Be cognizant of vehicle traffic.

Use flashlights, vehicle lights and other lighting during nighttime activities. If warranted, request light plants and other larger lighting.

Keep truck flashing lights on if manning roadblocks.

Be aware of the potential for severe weather. In the refinery, the Shift Foreman will make an anouncement on the plant radio system if there are special precautions or if there is a need to take shelter.

Park Vehicle for roadblocks so that your on not in oncoming traffics lane. If someone is not paying attention, they could potentially not notice the roadblock.

Additional Information

If impacted wildlife are observed. Do not approach or attempt to capture. Please contact Husky Hill Avenue guard shack at 715-398-8220 or 221

ICS 204 - Assignment List	Task Force: Decon Task Force
Incident Name: 2018 Superior Refinery Fire	Period: Period 8 [05/11/2018 06:00 - 05/14/2018 06:00]

Operations Personnel

Position	Name	Affiliation	Contact Number(s)	Work Shift
Operations Section Chief	Fredman, Peter	Husky Energy Inc.	320-288-6161	
Deputy Operations Section Chief	Schade, Kollin	Husky Energy Inc.	317-292-6594	
Decon Task Force Leader	Raiha, John	Husky Energy Inc.	218-390-4078	

Resources Required

Area Of Operation	Resource Kind	Description	Quantity	Size
Decon Task Force	Manpower: Responder	Manpower: Responder	4	
Decon Task Force	Miscellaneous	Decon Station	1	

Assignments

Conduct personnel decon for those exiting the hot zone per standard procedure outlined in Refinery ERP.

Decon stations are at;
- #1 Cooling tower
- West of flare

Communications

Name / Function	Contact Details
ERT Channel	8
Channel 1 Talk Around	11
Primary	1
Secondary	2
Radio	3 to 7

Special Environmental Considerations

Actions shall be taken to minimize any release of hydrocarbons to the environment. Any liquid hydrocarbon release shall be cleaned up immediately and disposed of properly.
Notification of any venting/release of vapor/liquid hydrocarbon shall be made to the GHD air monitoring group immediately for consideration in air monitoring. Any liquid hydrocarbon release shall be cleaned up immediately.

Special Site-Specific Safety Considerations

Decon personnel must wear chemical gear over FR coveralls.

Use flashlights, vehicle lights and other lighting during nighttime activities. If warranted, request light plants and other larger lighting.

Four station boot Decon:
1. Simple Green and/or Orange Peel used to decon at Wash Station #1
2. Water rinse at station #2
3. Water rinse at station #3
4. Clean water tub at station #4

Be aware of the potential for severe weather. In the refinery, the Shift Foreman will make an anouncement on the plant radio system if there are special precautions or if there is a need to take shelter.

Additional Information

If impacted wildlife are observed. Do not approach or attempt to capture. Please contact Husky Hill Avenue guard shack at 715-398-8220 or 221

ICS 204 - Assignment List	Other: Investigation Task Force
Incident Name: 2018 Superior Refinery Fire	Period: Period 8 [05/11/2018 06:00 - 05/14/2018 06:00]

Operations Personnel

Position	Name	Affiliation	Contact Number(s)	Work Shift
Operations Section Chief	Fredman, Peter	Husky Energy Inc.	320-288-6161	
Deputy Operations Section Chief	Schade, Kollin	Husky Energy Inc.	317-292-6594	
Investigation Task Force	Demchuk, Bill	Husky Energy Inc.	403 702-5724	

Resources Required

Area Of Operation	Resource Kind	Description	Quantity	Size
Investigation Task Force	Manpower: Responder	Manpower: Responder	18	

Assignments

Baker Risk to clear the green gas unit and inventorying evidence

Continue to develop plans for DCS data replication

Continue to support evidence collection as prioritized by operations

Special Site-Specific Safety Considerations

If in Hot Zone, follow Hot Zone entry procedures.

If in Warm or Cold Zone, refinery PPE must be worn.

Hazard assessment must be done to plan safe work.

Be cognizant of the hazards of the product in reactor as well as nitrogen, fire and similar hazards.

Use flashlights, vehicle lights and other lighting during nighttime activities. If warranted, request light plants and other larger lighting.

Emergency Alarm system will signal need to evacuate from the site. Secondary alarm is via the Channel 1 on plant radio.

For work in the hot zone or where damage has occurred to equipment, area must be assessed for asbestos and other hazardous materials by an Industrial Hygienist or Wisconsin Licensed Asbestos personnel prior to their work. Safe work permit request must include request for this determination. Any concerns found as part of this assessment must be addressed prior to any work being done.

Be aware of the potential for severe weather. The Shift Foreman will make an announcement if there are special precautions or if there is a need to take shelter.

Additional Information

If impacted wildlife are observed. Do not approach or attempt to capture. Please contact Husky Hill Avenue guard shack at 715-398-8220 or 221

Radio Channel Information

Ch #	*Function*	*Channel Name/ Trunked Radio System Talkgroup*	*Assignment*	*Rx Freq N or W*	*Rx Tone/NAC*	*Tx Freq N or W*	*Tx Tone/NAC*	*Mode (A, D, or M)*	*Remarks*
1	Primary	Primary Radio Channel - Repeated							
2	Secondary	Secondary Radio Channel - Repeated							Secondary Repeated Channel Unit and Use s
3 to 7	Radio	Radio to Radio Channels							Working Channel
8	ERT Channel	Emergency Response Channel							Emergency Response Team Channel
11	Channel 1 Talk Around	Channel 1 Talk Around							Use this channel in case of failure of repeated Channel 1
12	Channel 2 Talk Around	Channel 2 Talk Around							Use this channel in case of failure of repeated Channel 2

Special Radio Instructions

Local Communications Information

Name	*Incident Assigned Position*	*Mobile Phone*	*Work Phone*	*Email*	*Notes*
Long, David	Incident Commander (May 8th)	Non-Responsive	403-298-7299	david.long@huskyenergy.com	
Harris, Paul	Deputy Incident Commander		306 820-8250	Paul.Harris@huskyenergy.com	
Morrison, Dave	Agency Representative			morrison.david@epa.gov	
Syphard, Dan	Legal Officer			dan.syphard@huskyenergy.com	
Lott, Sean	Liaison Officer			Sean.Lott@huskyenergy.com	
O'Brien, John	Safety Officer			john.obrien@huskyenergy.com	
Gavalas, Judith	HR Officer				
Westersund, Elizabeth	Public Information Officer			elizabeth.westersund@huskyenergy.com	
Fredman, Peter	Operations Section Chief			peter.fredman@huskyenergy.com	
Schade, Kollin	Deputy Operations Section Chief			kollin.schade@huskyenergy.com	
Tokarz, Christina	Planning Section Chief			Christina.Tokarz@huskyenergy.com	
Choate, Jerry	Logistics Section Chief			jerry.choate@huskyenergy.com	
Shaah, Dax	Deputy Logistics Section Chief (May 8th)				
Bruckelmyer, Jason	Support Branch Director			jason.bruckelmyer@huskyenergy.com	
Black, Jason	Supply Unit Leader			jason.black@huskyenergy.com	
Kowitz, Kim	Finance Section Chief			kim.kowitz@huskyenergy.com	
Verrill, John	Deputy Finance Section Chief			john.verrill@huskyenergy.com	
Thurber, Brandon	Situation Unit Leader		403 750-1613	brandon.thurber@huskyenergy.com	
Buckley, Joe	Resource Unit Leader			jbuckley@responsegroupinc.com	
Cooke, Lorelee	Documentation Unit Leader		403 298-6238	lorelee.cooke@huskyenergy.com	
Beattie, Dave	Environmental Unit Leader (5/11-5/12)			dave.beattie@huskyenergy.com	
Ratliffe, Will	Environmental Unit Leader (5/13)				
Shook, Anthony	GIS Specialist			AShook@responsegroupinc.com	

Medical Aid Stations

Name	*Location*	*Paramedic On Site*	*Phone*	*Radio*
Superior Refinery Medical Aid Station	-92.07578 46.68889	[x]		

Transportation (Ground and/or Air Ambulance Services)

Ambulance Service	*Location*	*Phone*	*Radio*	*Air*	*ALS*
Global Air Ambulance	3500 Tower Ave. Superior, WI 54888 -92.07202 46.68952	Ph1: (305) 514-0942		[x]	[ ]
Gold Cross Ambulance Service	4505 W. Michigan St. Duluth, MN -92.15475 46.74444	Ph1: (218) 628-9323		[ ]	[ ]

Hospitals

Hospital	*Location*	*Phone*	*Radio*	*Air Travel Time*	*Ground Travel Time*	*Trauma Center*	*Helipad*	*Burn Center*
Essentia Health St. Mary's Hospital	3500 Tower Ave Superior, MN -92.10236 46.69748	Ph1: (715) 817-7000		min	15 min	II	[x]	[ ]
Essentia Health Duluth (Miller Dwan) Thermal or Chemical Burns	502 E 2nd St Duluth, MN -92.09367 46.79244	Ph1: (218) 727-8762		min	30 min	II	[ ]	[x]
St Luke's Duluth	915 East First Street Duluth, MN -92.08762 46.79718	Ph1: (218) 249-5555		min	30 min	II	[x]	[ ]
				min	min		[ ]	[ ]

Special Medical Emergency Procedures

All injured employees who require more than in-house first aid, (i.e. lacerations requiring stitches, severe eye problems, severe strains/sprains or fractures) will be sent to the following medical facility:
Essentia St. Mary's Occupational Medicine Clinic
3500 Tower Ave
Superior, WI
(715) 817-7100

INJURIES INVOLVING EXPOSURE TO HYDROFLUORIC ACID
For minor exposures, the employee may be transported to Essentia St. Mary's Emergency Room in Superior, the Essentia Duluth Clinic Occupational Medicine Clinic or the Essentia St. Mary's Hospital Emergency Room in Duluth.
For all but minor exposures, the employee should be transported by ambulance to:
St. Mary's Hospital Emergency Room in Duluth:
407 East 3rd Street
Duluth. MN
218-786-4000

INJURIES INVOLVING THERMAL OR CHEMICAL BURNS
For injuries involving all but minor thermal or chemical burns, employees should be transported by ambulance to:
Essentia Miller-Dwan Burn Center 502 E. Second St., First Floor
Duluth, MN
(218) 786-2815

MEDICAL SERVICES/EMPLOYEE MEDICAL RECORDS/ WORKER'S COMPENSATION

SCOPE

This Standard Practice Instructions is to be considered Husky Superior company policy and minimum acceptable standards under normal conditions. Stricter requirements may apply under certain situations. If a problem is encountered, consultation with a safety professional should be considered before proceeding. Keep in mind that any alternative procedure must be at least as effective as these instructions in providing a safe workplace.

RATIONALE

This procedure was developed to inform all supervisors of the steps which need to be taken to insure that all injured employees are properly cared for, to explain access to employee medical records, and to explain the worker's compensation procedure.

APPLICATION

This policy describes the procedure that needs to be followed by all Husky Superior employees when it is necessary to obtain medical services, access medical records, or receive worker's compensation.

DEFINITIONS

Minor injury – Any injury that can be properly attended with in-house first aid. This type of injury might include strains/sprains, lacerations not requiring stitches, irrigating eyes or minor burns (either chemical or thermal).

Medical First-Aid Injuries – Any injury that can be properly attended by a physician with first-aid treatment.

Serious Injury – An injury that resulted in an OSHA recordable injury, lost-time injury (either lost workdays or restricted workdays) or fatality.

PROCEDURE FOR OBTAINING MEDICAL SERVICES

Note: On-Shift Emergency Response Team (ERT) Members should be called to assist on all, but very minor, medical incidents.

DAYTIME HOURS, MONDAY THROUGH FRIDAY

All injured employees who require more than in-house first aid, (i.e. lacerations requiring stitches, severe eye problems, severe strains/sprains or fractures) will be sent to the following medical facility:

Essentia SMDC Occupational Medicine Clinic
Duluth Clinic 3rd Street Building
400 E. Third St.
Duluth, MN
(218) 786-3392

-or-

Essentia St. Mary's Occupational Medicine Clinic
3500 Tower Ave
Superior, WI
(715) 817-7100

A. The immediate supervisor shall contact the Safety Department and advise of the injured employee.

B. The Safety Manager or other member of the Safety Department will notify Essentia that an employee of Husky Superior is in route and give them a brief description of the employee's condition.

    a. If requested by the Employee's Supervisor, the medical facility will also be advised that a drug screen and breath alcohol test according to the Husky Superior Drug and Alcohol Program will be needed.

C. The Safety Manager, other member of the Safety Department or the Shift Foreman/Employee's Supervisor should accompany the injured employee to the medical facility to assure prompt and immediate medical attention is obtained. The medical facility will direct proper medical attention/treatment.

EVENINGS, WEEKENDS, HOLIDAYS

If an employee is injured Monday through Friday, after 5:00 PM, on a Saturday, Sunday, or holiday, the shift supervisor will follow these guidelines.

Minor Injuries

All injured employees who require more than in-house first aid, (i.e. lacerations requiring stitches, severe eye problems, severe strains/sprains or fractures) will be sent to the following medical facility:

Essentia St. Mary's Emergency Room
3500 Tower Ave
Superior, WI 54880
Phone: (715) 817-7100

Serious Injury

Some injuries may be such that immediate outside medical attention is required. If it has been determined that the injury is not life threatening but will require outside medical attention, the injured employee should be transported either by company vehicle or by ambulance. Unless directed by ambulance or other emergency responders, the employee should be transported to the Emergency Room at Essentia St. Mary's Superior or Duluth.

A. The immediate supervisor shall contact the Safety Department and advise of the injured employee.

B. The Supervisor or the Safety Manager will notify Essentia that an employee of Husky Superior is in route and give them a brief description of the employee's condition.

    a. If requested by the Employee's Supervisor, the medical facility will also be advised that a drug screen and breath alcohol test according to the Husky Superior Drug and Alcohol Program will be needed.

C. The Shift Foreman/Employee's Supervisor, Safety Manager/Safety Department Member or other Husky Superior Employee should accompany the injured employee to the medical facility to assure prompt and immediate medical attention is obtained. The medical facility will direct proper medical attention/treatment.

LIFE THREATENING EMERGENCIES

If the injury is life threatening, the injured employee will be transported to the hospital by ambulance. An injured employee under these conditions will not be transported by a Husky Superior or contractor employee. The supervisor in charge shall call or designate someone to call 911.

Examples of Life Threatening Situations

a. Employee is unconscious

b. Severe bleeding

c. Cyanosis (blue lips, fingernails)

d. Severe head injury

e. Severe chest pain, pain radiating down arms

f. Compound fractures (bones exposed)

g. Immediate excessive swelling

h. Hypothermia

i. Heatstroke

j. Stroke

Information for Operator at 911

a. Give a brief description of the problem. This will enable EMT's to prepare the equipment necessary for the immediate care of the injured employee.

b. Give direction to the appropriate gate nearest the accident; advise that there will be someone at the gate to escort the emergency vehicle to the site of the accident.

After the 911 call, contact the following:

a. Call security and advise them of the pending arrival of the emergency vehicle.

b. Call the Essentia Medical facility that the employee was transported too and advise them that an employee of Husky Superior is in route and give them a brief description of the employee's condition and require a post accident drug/alcohol screen.

c. Notify either the Safety Manager, on-call personnel (weekends/holidays), or any available member of management.

INJURIES INVOLVING EXPOSURE TO HYDROFLUORIC ACID

For minor exposures, the employee may be transported to Essentia St. Mary's Emergency Room in Superior, the Essentia Duluth Clinic Occupational Medicine Clinic or the Essentia St. Mary's Hospital Emergency Room in Duluth.

For all but minor exposures, the employee should be transported by ambulance to:

St. Mary's Hospital Emergency Room in Duluth:
407 East 3rd Street
Duluth. MN
218-786-4000

Follow notification and other procedures as outlined above depending on the time of day that the exposure occurs.

INJURIES INVOLVING THERMAL OR CHEMICAL BURNS

For injuries involving all but minor thermal or chemical burns, employees should be transported by ambulance to:

Essentia Miller-Dwan Burn Center
502 E. Second St., First Floor
Duluth, MN
(218) 786-2815

Follow notification and other procedures as outlined above depending on the time of day that the exposure occurs.

SUPERVISOR'S INCIDENT/INJURY REPORT

The immediate supervisor shall complete the Supervisor's Incident/Injury Report form as soon as possible after the occurrence, but no later than the end of the shift on which it occurred.

NOTE: Husky Superior is required to notify OSHA within 8-hours of any incident that results in a fatality or the hospitalization of three or more employees. This notification will result in an OSHA investigation of the incident.

ACCESS TO RECORDS

The following records shall be made available, upon request, to any employee and to their representatives for examination and copying at a reasonable time and manner:

a. OSHA 300 log;

b. Work Comp First Report of Injury;

c. OSHA 300A Annual Summary of occupational injuries and illnesses;

d. Pulmonary function and audiometric testing.

e. Industrial hygiene sampling records.

Medical records are kept in a confidential file, separate from the personnel file in the general administrative office. These files include the pre-placement physical record and worker's compensation information. Audio and pulmonary medical records are maintained in a separate file in the Safety Department. Employees may inspect their medical records by contacting the Supervisor of Administrative Services.

WORKER'S COMPENSATION

An employee involved in a personal injury has the responsibility to perform the following steps:

1. Receive medical attention if needed.
2. Report injury to supervision immediately!
3. Complete all appropriate forms with supervision.

   NOTE: These forms must be completed as soon as possible after the occurrence, but no later than at the end of the shift on which it occurred.

4. Participate in all investigations as necessary.

If an employee has an injury or illness that has not been reported as an accident but the employee believes it is work related, the employee must inform the company of the circumstance of the injury or illness and how it relates to the work place.

When the employee gives notice of an injury, the employee may see a physician of his/her choice. However, Husky Superior reserves the right to send the employee to another doctor for a second opinion at its discretion. In emergencies, Husky Superior may choose the practitioner without offering a choice, but after the emergency, the employee still has the option of seeing his/her own physician. The employee also may change practitioners once, with notice to Husky Superior.

The employee must provide Husky Superior with a doctor's report that provides evidence that the illness/injury is related to the employee workplace.

Clinic/Hospital Information

Minor Injuries - Daytime Hours, Monday through Friday (either):

Essentia SMDC Occupational Medicine Clinic
Duluth Clinic 3rd Street Building
400 E. Third St.
Duluth, MN
(218) 786-3392

Essentia St. Mary's Occupational Medicine Clinic
3500 Tower Ave
Superior, WI
(715) 817-7100

Minor Injuries - Evenings, Weekends or Holidays:

Essentia St. Mary's ER - Superior
3500 Tower Ave
Superior, WI 54880
(715) 817-7100

Serious Injuries

Unless directed by ambulance or other emergency responders, the employee should be transported to either:

Essentia St. Mary's ER - Superior
3500 Tower Ave
Superior, WI 54880
(715) 817-7100

Essential St. Mary's Hospital ER - Duluth:
407 East 3rd Street
Duluth. MN
218-786-4000

HF Minor Exposures (any of the following):

Essentia St. Mary's ER - Superior
3500 Tower Ave
Superior, WI 54880
(715) 817-7100

Essentia Occup. Medicine Clinic
Duluth Clinic - 3rd Street Building
400 E. Third St.
Duluth, MN
(218) 786-3392

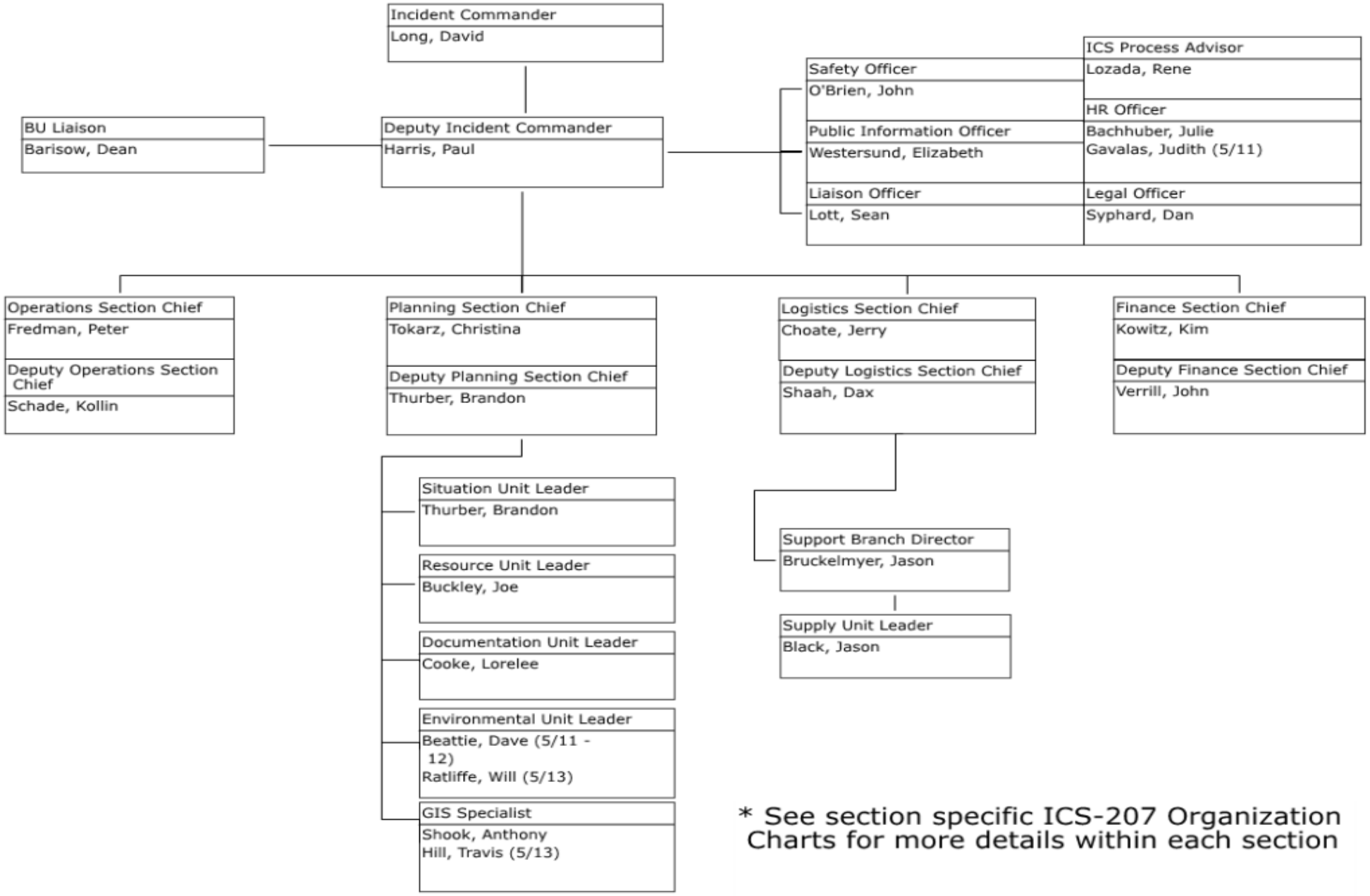
Essential St. Mary's ER - Duluth:
407 East 3rd Street
Duluth. MN
218-786-4000

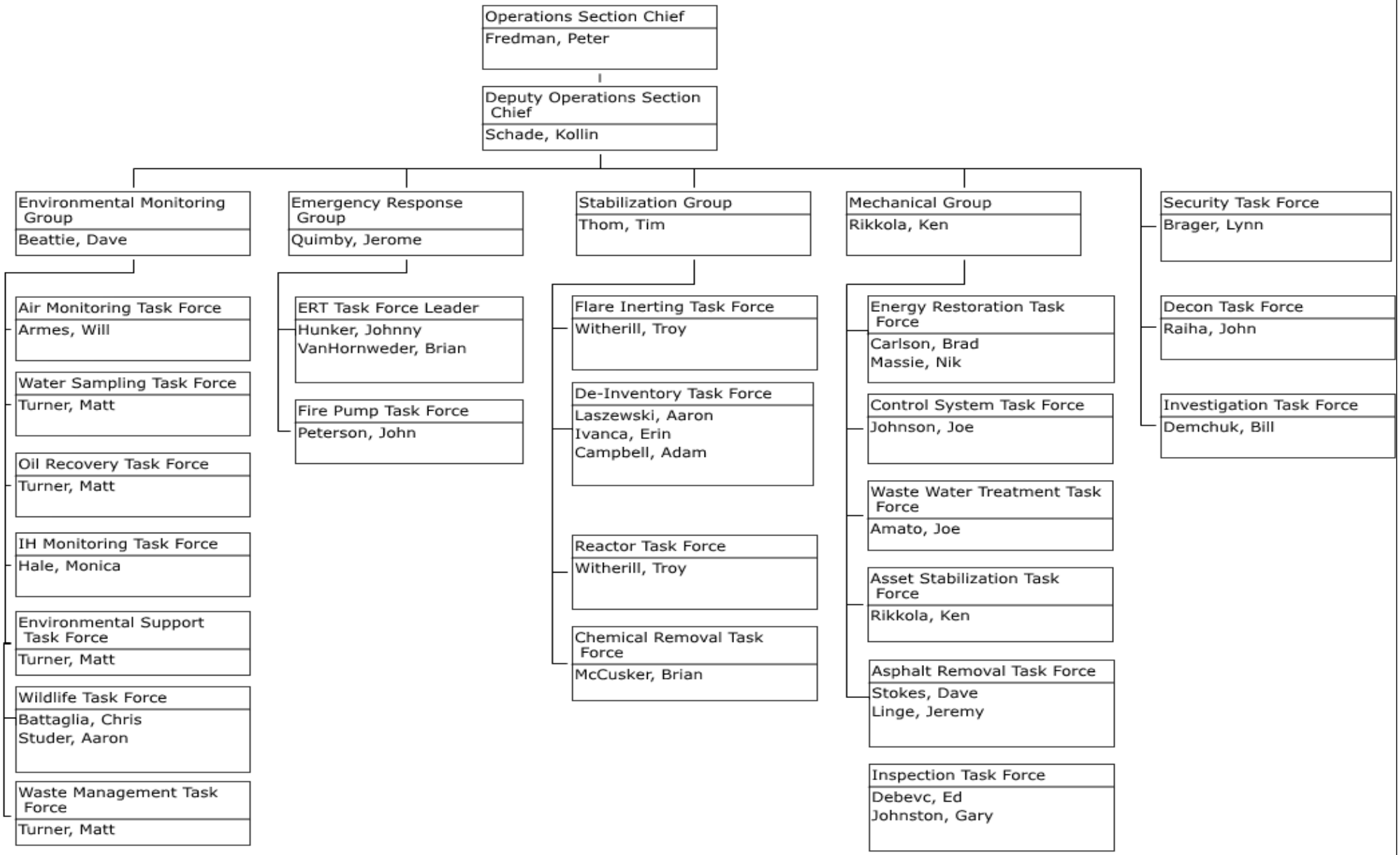
HF Serious Exposures:

Essential St. Mary's Hospital ER - Duluth:
407 East 3rd Street
Duluth. MN
218-786-4000

Serious Thermal or Chemical Burns

Essentia Miller-Dwan Burn Center
502 E. Second Street, First Floor
Duluth, MN
(218) 786-2815


Incident Commander
Long, David
BU Liaison
Barisow, Dean
Deputy Incident Commander
Harris, Paul
Safety Officer
O'Brien, John
ICS Process Advisor
Lozada, Rene
HR Officer
Public Information Officer
Westersund, Elizabeth
Bachhuber, Julie
Gavalas, Judith (5/11)
Liaison Officer
Lott, Sean
Legal Officer
Syphard, Dan
Operations Section Chief
Fredman, Peter
Deputy Operations Section Chief
Schade, Kollin
Planning Section Chief
Tokarz, Christina
Deputy Planning Section Chief
Thurber, Brandon
Logistics Section Chief
Choate, Jerry
Deputy Logistics Section Chief
Shaah, Dax
Finance Section Chief
Kowitz, Kim
Deputy Finance Section Chief
Verrill, John
Situation Unit Leader
Thurber, Brandon
Resource Unit Leader
Buckley, Joe
Documentation Unit Leader
Cooke, Lorelee
Environmental Unit Leader
Beattie, Dave (5/11 - 12)
Ratliffe, Will (5/13)
GIS Specialist
Shook, Anthony
Hill, Travis (5/13)
Support Branch Director
Bruckelmyer, Jason
Supply Unit Leader
Black, Jason
* See section specific ICS-207 Organization Charts for more details within each section


Operations Section Chief
Fredman, Peter
Deputy Operations Section Chief
Schade, Kollin
Environmental Monitoring Group
Beattie, Dave
Air Monitoring Task Force
Armes, Will
Water Sampling Task Force
Turner, Matt
Oil Recovery Task Force
Turner, Matt
IH Monitoring Task Force
Hale, Monica
Environmental Support Task Force
Turner, Matt
Wildlife Task Force
Battaglia, Chris
Studer, Aaron
Waste Management Task Force
Turner, Matt
Emergency Response Group
Quimby, Jerome
ERT Task Force Leader
Hunker, Johnny
VanHornweder, Brian
Fire Pump Task Force
Peterson, John
Stabilization Group
Thom, Tim
Flare Inerting Task Force
Witherill, Troy
De-Inventory Task Force
Laszewski, Aaron
Ivanca, Erin
Campbell, Adam
Reactor Task Force
Witherill, Troy
Chemical Removal Task Force
McCusker, Brian
Mechanical Group
Rikkola, Ken
Energy Restoration Task Force
Carlson, Brad
Massie, Nik
Control System Task Force
Johnson, Joe
Waste Water Treatment Task Force
Amato, Joe
Asset Stabilization Task Force
Rikkola, Ken
Asphalt Removal Task Force
Stokes, Dave
Linge, Jeremy
Inspection Task Force
Debevc, Ed
Johnston, Gary
Security Task Force
Brager, Lynn
Decon Task Force
Raiha, John
Investigation Task Force
Demchuk, Bill

ICS 208 - Site Safety Plan	Version Name: Refinery Site
Incident Name: 2018 Superior Refinery Fire	Period: Period 8 [05/11/2018 06:00 - 05/14/2018 06:00]
Applies to Site: Superior Refinery	

Site Characterization

Water	**Land**	**Weather**	Sunny
Wave Height	**Land Use**	**Air Temp**	52 Fahrenheit
Speed		**Wind Speed**	0 mph
Direction		**Direction**	N

Site Hazards

Yes	No	Hazards	Yes	No	Hazards	Yes	No	Hazards
x		Boat Safety	x		Fire, Explosion, In-situ Burning	x		Pump Hose
x		Chemical Hazards	x		Heat Stress	x		Slips, Trips, and Falls
	x	Cold Stress			Helicopter Operations	x		Steam and Hot Water
		Confined Spaces	x		Lifting		x	Trenching/Excavation
x		Drum Handling	x		Motor Vehicles		x	UV Radiation
x		Equipment Operations	x		Noise		x	Visibility
x		Electrical Operations	x		Overhead/Buried Utilities	x		Weather
x		Fatigue	x		Plants/Wildlife	x		Work Near Water

Air Monitoring Limits

Oxygen Level	19.5 to 22.5%	Benzene	1 PPM	Carbon Moxide	35 PPM
LEL	5%	Total Hydrocarbons	500 PPM	Hydroflouric Acid	3 PPM
Hydrogen Sulfide	10 PPM	Asbestos	0.1 Fiber per cc	Sulfur Dioxide	2 PPM

Engineering Controls

	Source of release secured		Valve(s) closed		Energy sources locked/tagged out
	Site secured	x	Facility shut down		

Personal Protective Equipment Required

	Impervious suit	x	Hard hats	x	Boots
	Inner gloves	x	Respirators	x	Bunker Gear
x	Outer gloves	x	Eye protection	x	ERT SCBA
x	Flame resistant clothing	x	Personal flotation		

Additional Control Measures Established

x	Decontamination	x	Illumination		Additional stations established
	Sanitation		Medical surveillance		Facilities provided

Work Plan

x	Booming		Excavation		Hot work
	Skimming	x	Heavy equipment	x	Appropriate permits used
x	Vac trucks	x	Sorbent pads		
x	Pumping	x	Patching		

Training

x	Verified site workers trained per local/federal regulatory requirements	**Training Requirements**	

Organization

Position	*Name*	*Telephone/Radio*	*Position*	*Name*	*Telephone/Radio*
Incident Commander	Long, David	403-542-1338	Safety Officer	O'Brien, John	218-390-4367
Deputy Incident Commander	Harris, Paul	780 522-5060	Operations Section Chief	Fredman, Peter	320-288-6161

Emergency Plan

[x]	Fire Prevention Plan	[x]	Evacuation Plan		
[x]	Alarm System	[x]	First Aid Location		

Notifications

	Facility		*Phone*		*Facility*		*Phone*
[x]	**Hospital**	Essential St. Mary's Hospital	218-786-4000	[x]	**Fire**	Superior Fire Department	911
[x]	**Ambulance**	Gold Cross	911	[x]	**Law Enforcement**	Superior Police Department	911
[ ]	**Air Ambulance**			[x]	**Emergency Response/Rescue**	ERT	Radio

Initial Briefing

[x] Initial safety briefing prepared for each site

Attachments/Appendices

Attachment	***Filename***
SDSs are available on the Refinery Intranet..rtf	SDSs are available on the Refinery Intranet..rtf

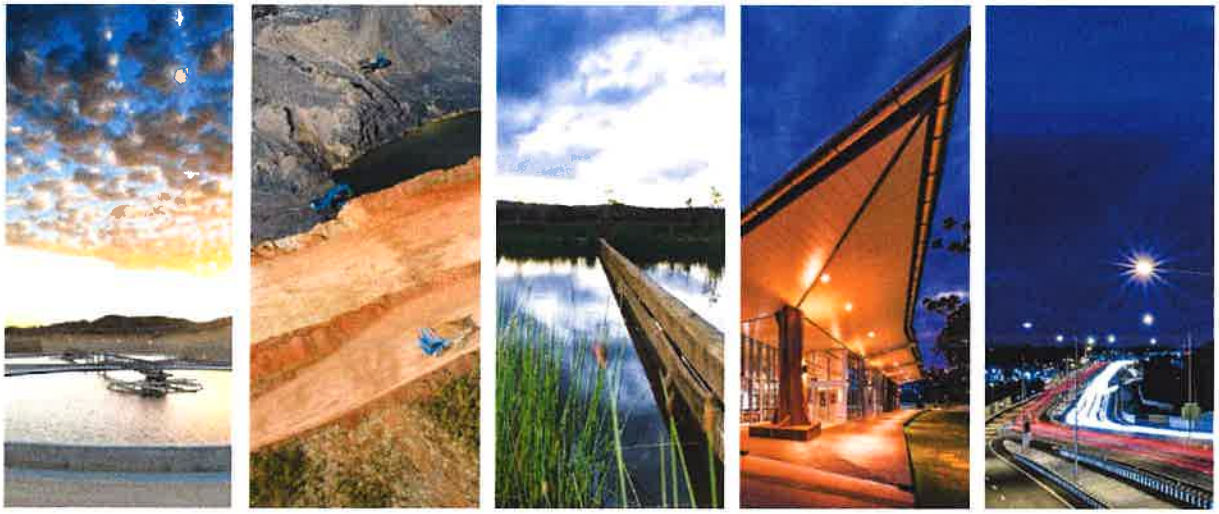
HUSKY ENERGY INC.

Site Air Monitoring Plan

2018 Superior Refinery Fire

GHD
5/10/2018

Environmental Unit Leader	**Signature**	**Date** 5/10/2018
Operations Section Chief	**Signature**	**Date** 5/10/2018
Planning Section Chief	**Signature**	**Date** 10 MAY 18
Incident commander	**Signature** David Long	**Date** 10 May 18



Site Air Monitoring Plan

2018 Superior Refinery Fire

Husky Energy Inc.

GHD | 11719 Hinson Road Suite 100 Little Rock, Arkansas 72212

11156937

May 10, 2018

Table of Contents

Table Index

1. Introduction and Objectives

At the request of Husky Energy Inc. (Husky), GHD Services Inc. (GHD) will provide air monitoring and industrial hygiene (IH) support related to an incident involving an asphalt fire. The incident occurred at the Husky Superior Refinery located in Superior, Wisconsin. These services are provided to assist Husky with ensuring the health and safety of personnel working at Site, members of the surrounding community, and the environment from compounds of interest (COIs) that may be emitted during the incident, and subsequent response and remediation efforts.

The purpose of this work plan is to address air monitoring/sampling during the response and remedial phases of the project. The specific objectives include the following:

- Perform real-time air monitoring for COIs at the perimeter of the incident site, surrounding area, and evacuation zone to characterize potential exposures to members of the community.
- Perform real-time air monitoring for COIs in the breathing zones of workers to evaluate potential exposures during site activities.
- Collect personal air samples, e.g. worker breathing zone samples, for COIs during site activities.
- Comply with the air monitoring requirements of the applicable standards and guidelines.
- Establish and implement procedures to ensure appropriate responses to elevated levels of COIs. This may include identifying areas requiring respiratory protection, or arranging for a timely evacuation of the site, surrounding area, and evacuation zone in the event of hazardous concentrations of airborne asphalt vapors.
- Communicate the hazards associated with exposures to the affected workers, members of the neighboring community, and other potential receptors. Employers will be required to comply with the applicable OSHA record keeping requirements. For personal samples that GHD collects, GHD will prepare notification letters to GHD employees, contractor employees, and Husky employees.
- Provide recommendations for controlling site exposures, respiratory protection, and other personal protective equipment (PPE) to incident command (IC).
- Respond to citizen concerns regarding re-occupancy of their residences or businesses.

GHD will continue air monitoring services until the project is completed and worker/community exposures to gases/vapors/combustion by-products associated with the incident are eliminated or until directed by Husky that this service should be demobilized. The air monitoring data will be collected and compiled in accordance with established IH guidelines and practices. In addition, the results will be communicated to Husky, site workers, and others as required and/or as necessary to ensure the safety and health of potentially affected individuals.

2. Exposure Standards and Guidelines

The US Occupational Health and Safety Administration provides established exposure limits for a worker's exposure to hazardous chemical substances. Additionally, Threshold Limit values (TLVs) established by the American Conference of Governmental Industrial Hygienists (ACGIH). Lastly, the National Institute of Occupational Safety and Health (NIOSH) has established immediately dangerous to life and health (IDLH) limits for various chemicals. Table 1 summarizes the OSHA occupational exposure limits and the NIOSH IDLH levels for the chemicals of interest.

Table 1 Occupational Exposure Limits and Guidelines

Analyte	OSHA PEL		ACGIH TLV		NIOSH-IDLH[3]	Units
	TWA	STEL	TWA[1]	STEL[2]		
Hydrogen Sulfide	---	20 C	1	5	100	Parts per million (ppm)
Total VOCs	500	---	100	---	3,500	
Benzene	1	5	0.5	2.5	500	
Toluene	200	300 C	20	---	500	
Ethyl Benzene	100	---	20	---	800	
Xylene	100	---	100	150	900	
Total Dust[5]	15	---	10	---	---	Milligram per cubic meter (mg/m^3)
Respirable Dust[5,6]	5	---	3R	---	---	
Asphalt	---	---	0.5	---	---	
Polycyclic Aromatic Hydrocarbons	0.2	---	---	---	---	

Notes:

1. Time Weighted Average (TWA) = The TWA concentration for a conventional 8-hour workday and a 40-hour workweek, to which nearly all workers may be repeatedly exposed, day after day, without adverse effect (ACGIH, 2017).
2. Short Term Exposure Limit (STEL) = A 15 minute TWA exposure that should not be exceeded at any time during a workday, even if the 8-hour TWA is within the TWA. (ACGIH, 2017)
3. Immediately Dangerous to Life and Health (IDLH) = Indicates an exposure to airborne contaminants that is likely to cause death or immediate or delayed permanent adverse health effects or prevent escape from such an environment.
4. Ceiling (C) = An exposure to a substance listed in OSHA Table Z-2 shall not exceed at any time during an 8-hour shift the acceptable ceiling concentration given for the substance in the table, except for a time period and up to a concentration not exceeding the maximum duration and concentration allowed in the column under "acceptable maximum peak" above the acceptable ceiling concentration for an 8-hour shift.
5. Particulates not otherwise specified (PNOS) i.e. dusts from solid substances without specific occupational exposure standards
6. Respirable fraction = particulates with an aerodynamic diameter of less than 4 micrometers. R = ACGIH recommends that concentrations of PNOS should be kept below an 8-hour TWA concentration of 3 mg/m3 (respirable) and 10 mg/m3 (inhalable/total) until such time as a TLV is set for a particular substance.

Action levels have been established to facilitate a timely and appropriate response to the detection of airborne hazards associated with asphalt constituents. Action levels have been set at levels lower

than the established exposure limits and guidelines. The purpose is to ensure that if these levels are detected, they are effectively communicated to affected workers and off site receptors so that appropriate action can be taken. The site-specific action levels for the work site are listed in Table 2. Most real-time monitoring will be conducted for volatile organic compounds (VOCs); chemical-specific monitoring for benzene, toluene, ethyl benzene, xylene (collectively known as BTEX) constituents will be monitored as total VOC levels dictate.

Table 2 Real-Time Air Monitoring Site Action Levels

Analyte	Action Level [1]	Description of Action
LEL (as Methane)	< 1%	No action required.
	≥ 1%	LEL levels will be communicated to designated site officials and all personnel will be instructed to be removed from the impacted areas. Indicates a potentially flammable atmosphere. No personnel shall be permitted in the impacted areas.
Total VOCs	< 50 ppm	No action required.
	≥ 50-100 ppm	Confirm with a duplicate sample. Total VOCs will be communicated to designated site officials and affected workers will don appropriate respiratory protection (Level C, with appropriate air purifying respirator (APR) cartridges).
	> 100 ppm	Confirm with a duplicate sample. Workers will be notified and moved away from areas of elevated concentrations. If it is necessary to be in these areas, supplied air will be used.
Hydrogen Sulfide	< 5 ppm	No action required.
	≥ 5-20 ppm	Confirm with a duplicate sample. Hydrogen sulfide levels will be communicated to designated site officials and affected workers will don appropriate respiratory protection (Level C, with appropriate air purifying respirator (APR) cartridges).
	> 20 ppm	Confirm with a duplicate sample. Workers will be notified and moved away from areas of elevated concentrations. If it is necessary to be in these areas, supplied air will be used.
Benzene (**Correction Factors Applied [2, 3, 4]**)	< 0.5 ppm	No action required. **Determine benzene concentrations using chemical-specific detection method [4].**
	≥ 0.5-25 ppm	Confirm with a duplicate sample. Communicate benzene concentrations to designated site officials and initiate SWA. Notify workers of benzene levels and instruct them to don or continue wearing full-face APR equipped with organic vapor cartridges, if work is to continue. **Determine benzene concentrations using chemical-specific detection method [4].**
	> 25 ppm	This concentration exceeds the maximum use concentration of a full face APR respirator. A

Table 2 Real-Time Air Monitoring Site Action Levels

Analyte	Action Level [1]	Description of Action
		supplied air respirator should be used at concentrations this action level. **Determine benzene concentrations using chemical-specific detection method [4].**
Particulate Matter (Total)	< 2.5 mg/m3	No action required.
	≥ 2.5-5 mg/m3	Confirm with a duplicate sample. Particulate matter levels will be communicated to designated site officials.
	> 5 mg/m3	Confirm with a duplicate sample. Workers will be notified and moved away from areas of elevated concentrations.
Particulate Matter (Respirable)	< 1.5 mg/m3	No action required.
	≥ 1.5-3 mg/m3	Confirm with a duplicate sample. Particulate matter levels will be communicated to designated site officials.
	> 3 mg/m3	Confirm with a duplicate sample. Workers will be notified and moved away from areas of elevated concentrations.

Note:
1 – Action Levels are based on sustained (over 1 minute) airborne concentrations.
2 – Benzene MultiRAE/AreaRAE 10.6 Lamp Correction Factor – 0.47
3 – Benzene UltraRAE 9.8 Lamp Correction Factor – 0.55
4 - UltraRAE 3000 can be used as a **chemical-specific detection method** with RAE Benzene Sep Tubes

2.1 Community Exposure Guidelines

Community real-time air monitoring will be conducted using real-time air monitoring techniques described below, on an as-needed basis, as determined by site personnel. Many of the exposure standards and guidelines for COIs shown in Table 3 are not of sufficient concentration to be measured instantaneously by real-time air monitoring methods. Additionally, many of the standards or guidelines are intended to protect the general public and sensitive community members from lifetime exposures to each COI. Emergency exposures are generally much shorter and therefore different community standards are warranted for action levels at community locations. Table 4 summarizes the proposed Community Real-time Monitoring Action Levels for this response.

Table 3 Community Real-Time Monitoring Action Levels

COC	Averaging Period	Concentration	Limiting Effect/Basis
Hydrogen Sulfide	1-hour average	0.1 ppm	AIHA ERPG-1 – Odor Perception

Total VOCs	1-hour average	1 ppm	Based on half of Stoddard Solvent Action Level (100 ppm) divided by 42
Benzene	1-hour average	0.053 ppm	Texas Effects Screening Level – 1 hour averaging period
Toluene	1 hour average	1.2 ppm	Texas Effects Screening Level – 1 hour averaging period
Ethylbenzene	10 minute average	33 ppm	USEPA AEGL
Xylene	10 minute average	130 ppm	USEPA AEGL
Particulate matter – TSP, PM10 or PM2.5	1 hour average	100 $\mu g/m^3$	Adopted from the USEPA Guide for Wildfire Smoke[1]

Comments:

If the average concentration of a COI is exceeded over the averaging period, exposed community members should be notified and mitigation measures should be implemented. Evacuation or shelter-in-place decisions should be discussed with the appropriate authorities including IC.

3. Real-Time Air Monitoring

3.1 Asphalt and By-Products

Real-time air monitoring for COIs may be performed during normal work operations using MultiRAE 5 gas monitors, AreaRAEs, TSI Dusttrak monitors, and UltraRAE 3000 monitors with benzene-specific monitoring capabilities.

Instruments will be calibrated and operated in general accordance with the manufacturer's specifications or applicable test/method specifications. Real-time air monitoring will be performed at the following locations:

- Impacted areas where workers are present.
- Site perimeter – upwind and downwind.
- Off site receptors (community as identified and appropriate).

Air monitors will be placed at the perimeter of the work site to continuously monitor VOC concentrations. Using radio telemetry, the instantaneous readings for each air monitor will be transmitted to a single host computer at the site, allowing GHD personnel to simultaneously monitor the airborne concentrations for all perimeter stations from a central location. The MultiRAE and UltraRAE handheld monitors will be used to screen for total VOCs and benzene within the work

[1] Wildfire Smoke: A Guide for Public Health Officials. Revised May 2016. US Environmental Protection Agency;US Forest Service; US Centers for Disease Control and Prevention; California Air Resources Board.

areas and at designated off site locations. Additionally, TSI particulate monitors will be utilized to determine the concentrations of particulates within the work area and at perimeter locations.

If airborne concentrations of the chemicals listed in Table 2 are detected above the action levels established for the site, designated site safety personnel, operations officials, affected workers, and/or local regulatory representatives will be notified and appropriate actions will be taken to ensure the health and safety of the site workers.

4. Integrated Air Sampling

If required, personal air samples will be collected from the breathing zones of site workers in order to evaluate potential occupational exposures to constituents of asphalt. These air samples will be analyzed for BTEX, total hydrocarbons, and particulate matter.

A similar exposure group (SEG) analysis will be conducted to determine the number of samples which should be collected to represent the various job tasks conducted during the emergency phase and remediation efforts. SEGs are groups of workers having the same general exposure profile because of the similarities and frequency of the tasks they perform, the materials/processes in which they work, and the similarity of the way they perform the tasks. GHD personnel will identify and continuously observe work activities with potential COI exposures to determine SEGs. The major processes and work operations will be defined and correlated with the potential exposure to constituents of asphalt based on proximity to impacted areas.

Samples will be collected and analyzed in accordance with established methods. The analytical air sampling methods for the COIs are summarized in Table 5.

Table 4 Summary of Analytical Air Sampling Methods

Analytical Method	List of Analytes	Sample Media	Flow Rate (mL/min)	Typical Sample Volume
OSHA 1005	Total VOCs	3M 3520 OVM Passive Dosimeter	N/A	N/A
NIOSH 1500/1501	Benzene, Ehtylbenzene, Toluene, Xylene, Total Hydrocarbons	3M 3520 OVM Passive Dosimeter	N/A	N/A
NIOSH 0500	Total or Respirable Dust	2 and 3 Piece Pre-weighed PVC cassettes	2000	960 Liters

Samples will be shipped to Galson Laboratories, an American Industrial Hygiene Association (AIHA) accredited laboratory. Media will be provided to the laboratory for field blank sample comparison.

5. Quality Assurance/Quality Control (QA/QC) and Reporting

Real-time data collected will be stored in an on-site electronic archive. Manually-collected real-time data and integrated sampling information will be reviewed to ensure accuracy and completeness. The manually-collected monitoring/sampling data will be entered into an electronic database (spreadsheet or equivalent), and will undergo a quality assurance and quality control (QA/QC) review. Data entry forms and field notes will be kept on-site and retained for reference upon completion of the project. If necessary, full laboratory analysis data packages will be provided, and associated data validation processes will be arranged.

During the project, interim reporting of results may be required. This may include data summaries, maps, or other presentations of preliminary monitoring and sampling results. For example, a data summary will be provided to Husky every 24 hours, once data have undergone an initial QA/QC. Such reporting will be considered preliminary, as a final QA/QC of the data will not be complete. At the completion of the project, a report will be prepared in which data collected through real-time monitoring and integrated sampling analyses will be compiled, summarized, and reported to Husky. Data contained in the final report will have been through the QA/QC process, will be reviewed by a Certified Industrial Hygienist (CIH), and will be considered final.

This plan was prepared by GHD based on information available and provided to GHD on April 26, 2018 at approximately 14:50. As additional information becomes available, the plan may be revised as necessary and appropriate to meet the objectives as previously stated.

ADDENDUM 1 – 2018-04-28 12:00 PM

This addendum has been prepared to reflect adaptation of the air monitoring plan to current Site conditions. The air monitoring plan has specifically been prepared to address the following Site activities:

1. A fixed perimeter monitoring system is being deployed to the area currently delineated as the hot zone. This monitoring will be conducted in accordance with the Site action levels described about in Table 2.
2. A fixed perimeter monitoring system is being deployed to the perimeter of the refinery process area, within, but at, the fenceline. This monitoring will be used to provide information regarding air quality in close proximity to potential sources of emissions of COI during the cleanup and recovery phases of the project.
3. Mobile community monitoring teams will continue to conduct monitoring in the area outside the facility, with a focus on downwind monitoring, while the cleanup and recovery phases of the project are ongoing.

The communication described in Table 2, as well as communication of any exceedances of community action levels described in Table 3, will be conducted as follows:

1. Monitoring teams observing any of the three monitoring systems described in this addendum will communicate exceedances to the GHD on-site shift manager
2. The GHD on-site shift manager will communicate exceedances to the Environmental Unit Lead.
3. The Environmental Unit Lead will communicate with Incident Command, at which point appropriate procedures will be implemented as per IC procedures.

ADDENDUM 2 – 2018-05-10

Sulfur dioxide has been identified as an additional chemical of interest (COI) because it may be produced by the thermal oxidation of hydrogen sulfide during the de-inventorying process. GHD is mobilizing additional equipment and sensors to monitor for sulfur dioxide. RAE Systems AreaRAE Plus monitors equipped with sulfur dioxide sensors will be added around the work areas where de-inventorying is occurring. Additionally, AreaRAE Plus monitors equipped with sulfur dioxide sensors will be placed at the established fence line monitoring stations. Direct-read handheld monitoring instruments configured to monitor sulfur dioxide will be available to deploy with community monitoring teams in case there are any sulfur dioxide action levels at the fence line. This addendum establishes site action levels for sulfur dioxide.

The United States Occupational Safety and Health Administration (OSHA) has established a Permissible Exposure Limit (PEL) for Sulfur Dioxide of 5 ppm as an 8-hour Time Weighted Average (TWA). Additionally, the American Conference of Governmental Industrial Hygienists (ACGIH) has established a Threshold Limit Value of 0.25 ppm as an 8 hour TWA, which can be considered an exposure guideline. Work area action levels will be set below the current OSHA PEL in order to be conservative and ensure that workers are notified to move upwind of impacted areas or don respiratory protection before the atmosphere exceeds the OSHA PEL.

Table 1.1 presents the real-time air monitoring action levels for the work area. Table 1.2 presents the real-time monitoring action level for the perimeter.

Table 1.1 Work Zone Real Time Air Monitoring Action Levels

Analyte	Action Level [1]	Description of Action
Sulfur Dioxide	< 2.0 ppm	No action required.
	≥2.0-20 ppm	Confirm with a duplicate sample. Sulfur Dioxide levels will be communicated to designated site officials and affected workers will move away from the area or don appropriate respiratory protection (Level C, with appropriate air purifying respirator (APR) cartridges).
	> 20 ppm	Confirm with a duplicate sample. Workers will be notified and moved away from areas of elevated concentrations. If it is necessary to be in these areas, supplied air will be used.

Comments:
- Action level exceedance is based on a sustained 1 minute average

Table 1.2 Community Real Time Air Monitoring Action Levels

COI	Averaging Period	Concentration (ppm)	Limiting Effect/Basis
Sulfur Dioxide	3-hour Average – Not to be exceeded more than once per year	0.5	Health Effects/ National Ambient Air Quality Standards – Secondary Standard

Comments:

1. If levels persist above 0.5 ppm for a period greater than 15 minutes, site representatives should be notified
2. Confirm all readings with a separate instrument to validate the readings

HUSKY ENERGY INC.

Waste Management Plan

2018 Superior Refinery Fire

Matt Turner
5/6/2018

Environmental Unit Leader	**Signature**	**Date** 5/9/2018
Operations Section Chief	**Signature**	**Date** 5/9/2018
Planning Section Chief	**Signature**	**Date** 9 MAY 2018
Incident Commander	**Signature**	**Date** 5/9/2018

Contents

1. Objectives

1.1. Stream Identification

A stream requiring management can range from hazardous and non-hazardous wastes to streams in which hydrocarbon can be recovered and re-refined. Once individual streams are identified, it will be paramount to keep them separate from each other. Isolating streams will ensure proper management under this plan, the site-specific Emergency Response Plan, the Incident Action Plan, and the Asbestos Remediation Plan.

1.1.1. Known streams requiring management

- Asbestos Containing Material (ACM)
- Asphalt that is mixed with ACM, debris (metal, insulation etc.), and petroleum impacted soil
- #6 fuel oil and therminol
- Product inventory remaining in units
- All scoped waste from planned turnaround activities

1.1.2. Potential streams which would require management

- Chemicals from damaged containers (drums, totes, etc.)
- Any discovered or created streams (spills, new/altered work scopes, etc.)

1.2. Stream Storage

1.2.1. Wastes

Streams that are determined to be solid wastes (asphalt, debris, contaminated PPE, non-recoverable products, petroleum impacted soil etc.) will be disposed of off-site following DOT regulations as either non-hazardous waste or hazardous waste in accordance with RCRA regulations. Examples of storage containers for wastes include drums, totes, roll-off boxes and vacuum boxes. In accordance with the Asbestos Remediation Plan, all containers of ACM waste shipped off-site will be inspected by the licensed Wisconsin asbestos abatement contractor to ensure that the exteriors are asbestos free.

1.2.2. Recoverable/Recyclable Materials

Streams that are determined to be recyclable will be kept on-site in either a network of frac tanks or in the storage tank system of the facility. Frac tanks can be ordered with or without steam coils depending on what material will be stored inside them. Certain storage tanks (i.e. slop oil tanks) in the facility can also be used for the storage of streams for which hydrocarbons can be recovered but only after consulting with both the Operations Unit and Environmental Unit.

1.2.3. Water Needing Treatment

Due to the fire response efforts, a large amount of water containing firefighting foam compounds is currently present on-site that will ultimately need to be treated through the on-site Waste Water Treatment Plant (WWTP)and a granular activated carbon (GAC) system. This water is currently being stored in Ponds 2/3 & 4, the dike for tanks 106, 112 & 114, inside frac tanks, and inside Tank 45. With the WWTP and API Separator both operating, any contaminated water can be released at the on-site wash slab for processing and treatment through the API Separator, WWTP and GAC system.

1.3. Stream Management

Once individual streams have been properly identified, the focus will then turn towards their management. All management activities are to be done in accordance with the site-specific Emergency Response Plan, the Incident Action Plan, and the Asbestos Remediation Plan. Stream management will be done on a task-specific basis in conjunction with the Operations Section, the Environmental Unit, and the Wisconsin Licensed Asbestos Abatement Contractor as necessary. Barr Engineering and GHD will coordinate the documentation of any waste disposal that occurs.

All wastes will be transported off-site according to DOT and RCRA regulations. All hazardous wastes will be disposed of at a permitted TSDF in accordance with RCRA regulations.

Streams in which hydrocarbon can re recovered are to be managed along the following guidelines:

- Slop oil tanks and frac tanks with steam coils can be used for materials to re-refined onsite
    - Flare KO material, recovered #6 fuel oil, gas oil, LCO, process de-inventory, etc.
- Frac tanks without steam coils for materials that do not require heating
    - Gasoline and diesel range products
- Tanker trucks to move material directly from the site to an off-site facility for recovery and treatment

2. Contact Information

- Waste Management Task Force Leader: Matt Turner
- Environmental Unit Leader: Dave Beattie
- Waste Water Treatment Plant Superintendent: Joe Amato
- Wisconsin Licensed Asbestos Abatement Contractor: In-Line Construction

Superior Refinery Fire

Deinventory Plan

Benzene Splitter & BenzOUT Unit

Approvals:

Operations Section Chief: _____

Safety Officer: _____

Environmental Unit Leader: _____

Planning Section Chief: _____

Incident Commander: David Long

Lead Investigator: _____

	SUPERIOR REFINERY	OPERATING PROCEDURE
	Title: Benzene and Benz-out Unit De-inventory	
	Sub-title:	

Date written: 05/08/2018
Written by: Troy Witherill
Approval date: 05/08/2018
Approved by: Troy Witherill
Revision no: 1B

Procedure no: OPP0000
File no: O:\Benzout unit deinventory
Last revised date: 05/09/2018
Revised by: Troy Witherill

PURPOSE/SCOPE OF PROCEDURE

Deinventory of the Hydrocarbons from the Benzene/Benz-out unit.

SAFETY AND HEALTH CONSIDERATIONS

Reference the Safety Data Sheet (SDS) for all chemicals/catalyst/products in the process to obtain the properties of and hazards presented by these chemicals.

Reference the control measures to be taken if physical contact or airborne exposure occurs.

Reference precautions necessary to prevent exposure including Personal Protective Equipment.

PPE requirements are defined prior to the step when requirements exceed the standard plant PPE (hard hat, safety glasses, personal H2S monitor, fire resistant clothing, and safety toe footwear with defined heel).

HAZARDS OF THE PROCESS

Vapor Combustion unit (heat, flame, combustion of hydrocarbons)
CHEMICAL DANGERS: The main chemical risks associated with the Benzene and Benzout units are gasoline, benzene, and propane. There is no exposure to operators to these chemicals during this procedure.

APPLICABLE DOCUMENTS

Safe Upper and Lower Limits tables are troubleshooting guidelines that define Process Limits, Consequences of Deviation, and the steps to avoid or correct the deviation. They are used in conjunction with Operating Procedures to respond to process deviations that have initiated a DCS alarm. Tables are found in the Superior Refinery Information Server (SIS Webpage)

REQUIREMENTS

Process Parameter Limits are defined in the DCS. BE AWARE that both (Advisory) high and low alarms are considered to be non-operational due to the shutdown of the refinery on April 26. Minimum instrumentation requirements needed to complete this procedure are outlined below.

If required in procedure, upon completion of each step, the operator carrying out the step shall log time & initial indicating completion of the step.

PROCEDURE:

TIME INITIAL

_____ _____ 1. The Hydrocarbon Sump Pump 93-P04, Water Sump Pump 93-P03, and the hydrocarbon sump level indicators 93-LT311 and 93-LT308 [P&ID 93 200 SHT 10] must be powered up with temporary power out of Z-Building.

TIME INITIAL

_____ _____ 2. Before pressuring any portion of the Benzene/Benzout unit with Praxair TMVU nitrogen, pinch down on the nitrogen going into the flare at the 2DUF, Platformer, and at B-Compressor low pressure flare line in the FCC area. This will minimize wasted nitrogen when pressuring the Benzene/Benzout up.

_____ _____ 3. Isolate the Benzene and Benzout units from the flare and the high-pressure header. This involves closing 2-inch valve 15134 on the Sump [SHT 10], valves on the Benzene Splitter Overhead Receiver [SHT 4], valves on the Stabilizer Overhead Receiver [SHT 22], and valves on the Feed Drum [SHT 13].

_____ _____ 4. Verify that the Praxair TMVU is set at 20 psig. This is the minimum pressure that the TMVU can deliver without surging the TMVU tank. This will deliver an estimated 15 psig pressure at the Benzene and Benzout units.

Benzout Reactors 93-V6A/B Section [SHT 19/20]

_____ _____ 1. Pressure both Reactors up with the Praxair TMVU to the pressure delivered at the TMVU's minimum pressure setting.

_____ _____ 2. Open 2-inch drain valves 15448/15425 to Sump 93-V04.

_____ _____ 3. If the nitrogen pressure is not sufficient to keep the Hydrocarbon Sump Pump running continuously due to lack of liquid being drained to it, increase the TMVU pressure by 5 psig. Evaluate every 5 minutes and continue to increase the TMVU pressure by 5 psig every 5 minutes until the Hydrocarbon Sump Pump can operate continuously with the liquid being drained to it.

_____ _____ 4. When the level stops rising in the Sump, as seen on 93-LT311, close double block valves on Reactor inlets 15472/15470 and 15466/15464 and on Reactor outlets 15450/15453 and 15408/15405. This section is de-inventoried.

Benzene Splitter V01 and Overhead Receiver V02 Section [SHT 2/4]

_____ _____ 1. Connect a nitrogen hose, with a check valve, from drop 5257 to vent valve 14894 [SHT 1] on the Benzene Splitter feed into Feed/Bottoms exchangers 93-E01A/B. Install a pressure gauge at valve 14894 to monitor the nitrogen pressure.

_____ _____ 2. Make sure 4-inch valve 14896 is closed so no flow can go backwards to the Platformer.

_____ _____ 3. Pressure Splitter and Receiver with the TMVU.

_____ _____ 4. Open 2-inch drain valves 14746/14744 under the Receiver.

_____ _____ 5. Open 2-inch drain valve 15018 by XV-554 Splitter bottoms line along with valve 15015 and 15017.

TIME INITIAL

_____ _____ 6. Open low point valves to the closed drain system including five drains around the Compabloc E01s [SHT 1], two drains at the suction side of Splitter Btms Pumps P01A/B [SHT 2], two drains at the Reboiler Heater pass FCVs [SHT 3], and two drains at the suction side of Splitter Ovhd Pumps P02A/B [SHT 4].

_____ _____ 7. If the nitrogen pressure is not sufficient to keep the Hydrocarbon Sump Pump running continuously due to lack of liquid being drained to it, increase the TMVU pressure by 5 psig. Evaluate every 5 minutes and continue to increase the TMVU pressure by 5 psig every 5 minutes until the Hydrocarbon Sump Pump can operate continuously with the liquid being drained to it.

_____ _____ 8. When the level stops rising in the Sump, this section is de-inventoried.

Benzout Feed Drum V05 Section [SHT 13]

_____ _____ 1. The Instrument Shop will use a portable air tank to force open the Feed Drum to Charge Pumps valve XV-600. This will allow the liquid in the Drum to flow down to the suction of the Charge Pumps.

_____ _____ 2. Connect a hose, with a check valve, from the nitrogen header to bleed valve 15703 between the double blocks [SHT 12] to the Feed Drum.

_____ _____ 3. Open both 2-inch drain valves 15318/15277 [SHT 14] on the suction of the Charge Pumps.

_____ _____ 4. When the level stops rising in the Sump, this section is de-inventoried.

Benzout Stabilizer V07 and Overhead Receiver V08 Section [SHT 21/22]

_____ _____ 1. Open all control valve bypasses in the Benzout unit except the charge FCV-119 [SHT 14]. Keeping this closed will prevent possible seal damage to the Charge Pumps 93-P07A/B.

_____ _____ 2. The nitrogen will follow the normal unit flow through the Reactor bypass valves 15430/15432 and 15429/15427 [SHT 19/20], and into the Stabilizer. Monitor the pressure on the pressure gauge on the third deck Overhead Receiver.

_____ _____ 3. When the level stops rising in the Sump, this section is de-inventoried.

Miscellaneous Benzout Sections

_____ _____ 1. Open every low point valve that is connected to the closed drain system. Run hoses from the three areas where large quantities of hydrocarbons may be found not tied into the closed drain system including the E04s and E07s on the first deck and the E06s on the second deck.

_____ _____ 2. When the level stops rising in the Sump, this section is de-inventoried.

NOTE: ANY VAPORS THAT EVOLVE IN THE SUMP WILL BE ROUTED FROM THE TOP OF THE SUMP TO EVERGREEN'S VAPOR COMBUSTION UNIT.

TIME INITIAL

_____ _____ 1. Once all sections have been de-inventoried, pressure up all sections, except the Reactor section, to 50 psig and de-pressure to 5 psig three times. This will leave the units with under 10% HC vapors.

THE MATH BEHIND HOW THE PRESSURES/DEPRESSURES WORK:

- Hydrocarbon vapor filled system: 0 N2 + 1.0 HC = 100% HC vapor
- After first pressure/depressure: 1 N2 + 1 HC = 50% HC vapor
- After second pressure/depressure: 2 N2 + 0.5 HC = 20% HC vapor
- After third pressure/depressure: 3 N2 + 0.2 HC = 6% HC vapor

_____ _____ 2. Start the Water Sump Pump and pump the hydrocarbon out of that side to the WWTP. Notify the WWTP when this is being done. Monitor the level on LT308. Shut the pump off when the level is emptied.

_____ _____ 3. Return the flare line nitrogen purges at the 2DUF, Platformer, and FCC areas to their previously open positions.

END OF PROCEDURE

SUPERIOR REFINERY MANAGEMENT OF CHANGE (MOC) & PROJECT SAFETY REVIEW TRACKING FORM (PSR)

Section 1 DESCRIPTION OF PROPOSED CHANGE

MOC No: 2480

Title of Change: Deinventory BenzOut Unit

Change Coordinator: Troy Witherill

Date: 5-2-18

Unit: BenzOut

Type of Change

Equipment Change	Procedure / Operations Change
☐ What-If Checklist (PHA) or Hazop Note: PHA required for design changes. Note: What-If Checklist is attached to the end of this document when needed.	☐ PROCEDURE / OPERATIONS
☐ PSR Stage (1-4 or 6 Post) enter applicable	☐ S/D CONTROLS / SIS / LIMITS / S/D Interlocks
☒ PSR 5 (Pre-Start up always Reg.)	☐ CHEMICAL APPROVAL
	☐ OTHER
If the MOC is to by-pass a Shutdown Instrument, Shutdown Device, or Safety Instrumented System (SIS) approval from the Complex Manager or RSS is required and notification of the Plant Manager or designate as soon as practical.	

Duration: ☐ Permanent ☐ Permanent Shutdown ☐ Temporary (6 months) ☐ Temporary Shutdown (Requires S/D to complete)

Description: (attach detailed information) Remove product from BenzOut unit,

Technical Basis for Change: (design considerations) Leave the unit in a safe state until further plans are developed

Approval in the off-hours and Emergency – (When changes are required in the off shift hours or in an emergency the Refinery Shift Superintendent has the authority to authorize the change.

Section 2 MOC TEAM

See attached sign up sheet

MOC TEAM (Individuals impacted by change that may need to be involved in the PHA or Pre-Startup Review)

X if YES	DEPARTMENT	Name	X if YES	DEPARTMENT	Name
☐	Rotating Equipment		☐	Inspection	
☐	Electrical		☐	Safety	
☐	Maint Engr		☐	Environmental	
☐	Project Engr		☐	PSM/RMP	
☐	Process Engr		☐	HR-Training	
☐	Maint Supervisor		☐	Operations Supervisor	
☐	Instrumentation		☐	Operations Manager	
☐	Advanced Controls		☐		
☐			☐	Contractor	
☐	Operation Rep		☐		
☐	Shift Supervisor		☐		

MOC No. _____

ISSUES FOR DISCUSSION
EXPANDED TO MORE SPECIFIC QUESTIONS

A. Process Safety Information

Also review all outstanding items from previous PSRs and PHA.

NA

Pre S/U	Post S/U	Update Existing / Create New	Assigned To / Completed By	Date Completed
☐	☐	Alarm Rationalization & Priorities Established and Set In DCS		
☐	☐	Cause & Effect Diagrams		
☐	☐	DCS Graphics Update		
☐	☐	Equipment Files Updated		
☐	☐	Elec. Area Class Drawing		
☐	☐	Electrical One Lines		
☐	☐	Equipment Limits & Design Codes		
☐	☐	Superior EP's Followed-Deviations		
☐	☐	Line Sloped (i.e. flare headers)		
☐	☐	Material & Energy Balance		
☒	☐	P&IDs Highlights	TROY W.	5/18/18
☐	☐	P&ID's Available to Operations (Red lines OK)		
☒	☐	PFD	TROY W.	5/18/18
☐	☐	PI Data		
☐	☐	Process Chemistry		
☐	☐	PSV Database Design Basis		
☐	☐	Safe Operating Limits		
☐	☐	Verify Flare Capacity Study is Current		
☐	☐			

NA

B. Process Hazards Analysis

Also review all outstanding items from previous PSRs and PHA.

Pre S/U	Post S/U	Action	Assigned To / Completed By	Date Completed
☐	☐	Car Seal List		
☐	☐	Design Changes Were Re-Hazoped		
☐	☐	LOPAs Completed		
☐	☐	PHA Completed as Required		
☐	☐	PHA Recommendations Complete		
☐	☐	RMP Update		
☐	☐			

C. Health Issues

Also review all outstanding items from previous PSRs and PHA.

Pre S/U	Post S/U	Update Existing / Create New	Assigned To / Completed By	Date Completed
☒	☐	Asbestos/Lead Paint Program	GHD	5-9-18
☐	☐	Employee Exposure & Personal Monitoring/Records		
☐	☐	HAZCOM Equipment Labels		
☒	☐	Proper PPE Identified Hot + Warm Zone PPE	Safety	5-2-18
☐	☐	SDS		
☐	☐	Stenciling/Labeling		
☒	☐	Temporary Building/Trailer Siting	SRS	5/8/18
☐	☐			

D. Environmental Issues

Also review all outstanding items from previous PSRs and PHA.

Pre S/U	Post S/U	Update Existing / Create New	Assigned To / Completed By	Date Completed
☐	☐	Benzene TAB		
☐	☐	CEMS installed and calibrated correctly		
☐	☐	LDAR Field Tags & Data Base Updated		
☐	☐	Marked Up P&ID received by LDAR Before S/U		
☐	☐	Notify LDAR group when system is starting		
☐	☐	Provide Marked up P&ID to LDAR Before S/U		
☐	☐	RATA/Ops. Env.		
☐	☐	Sewer PTI - Verify if Leak Test is Required		
☐	☐	Shutdown/Startup Checklist (SSM)		
☐	☐	Title V Update/PTI and/or Update		
☐	☐	Waste Disposal		
☒	☐	Temp Flare to combust vapors	Maintenance/Jamal	5-9-18

E. Mechanical Integrity

Also review all outstanding items from previous PSRs and PHA.

NA

Pre S/U	Post S/U	Update Existing / Create New	Assigned To / Completed By	Date Completed
PIPING & STATIONARY EQUIPMENT –				
☐	☐	Inspection drawings		
☐	☐	Flange Management - Bolts Torqued per Requirements		
☐	☐	Chain Wheel Operators		
☐	☐	Clamp List		
☐	☐	CUI Removed or Protected		
☐	☐	Dead Legs		
☐	☐	Field Inspection (QA/QC) Reports		
☐	☐	Gaskets & Packings Checked		
☐	☐	Grounding Wires		
☐	☐	Inspection PSV/TRV Database		
☐	☐	Inspection Recommendations		
☐	☐	Insulation Installed		
☐	☐	Maint. Tightness Check		
☐	☐	Operations Tightness Check		
☐	☐	PMI (Positive Material Identification) Completed		

PSSR

Pre S/U	Post S/U	Update Existing / Create New	Assigned To / Completed By	Date Completed
☐	☐	Protective Coatings		
☐	☐	Valve Bench PSV Test Reports		
☐	☐	Vendor Drawings		
☒	☐	Vessel/Pipe Shop Insp. package	ENAIS	5/7/18
☐	☐			
CONTROLS				
☐	☐	Alarm Database Update		
☐	☐	Alarm Response Update		
☐	☐	Calibration & Testing Data		
☐	☐	Control System FAT/SAT Reports		
☐	☐	Critical/Testing Reports Complete		
☒	☐	EIV ~~Field Tests~~ Air to open XV600 for phase 2	Instrumentation	
☐	☐	EIV PM Database Update		
☐	☐	Loop Folders & Test Reports		
☐	☐	SIS Database and Field Testing		
☒	☐	Local levels (both HC + H_2O) by end of job	Brad Gibson	5-10-18
ELECTRICAL				
☐	☐	Cathodic Protection		
☐	☐	Electric Heat Trace Test Reports		
☐	☐	Equipment Files		
☐	☐	Field Test Reports		
☐	☐	Protective Relay Settings		
☐	☐	Max AMP Level Established		
☐	☐	~~Mfgr. Test Reports Received~~ Benz Out	Nik Massie	5-10-18
☒	☒	Temporary electric to ~~Pumps~~ sump pumps	~~Brad Carlson~~	
ROTATING EQUIPMENT				
☐	☐	Equipment Files		
☐	☐	Field Final Alignment & settings		
☐	☐	Lubricants & Fluids at Level		
☐	☐	Vibration Probes Functional (Trend Master)		
☐	☐			
MECHANICAL INTEGRITY GENERAL				
☐	☐	Change in PM Schedule Identified		
☐	☐	Enter a SAP WO for Shutdown Worklist		
☐	☐	Spare Parts On-Hand		
☐	☐	Vessel Media Inspected		
☐	☒	Return ~~Steam~~ piping to flare		

Return to Normal When

Pre Post

F. Operating & Maintenance Procedures

Also review all outstanding items from previous PSRs and PHA.

Pre S/U	Post S/U	Update Existing / Create New	Assigned To / Completed By	Date Completed
OPERATING PROCEDURES				
☐	☐	Emergency Operations		
☐	☐	Emergency Shutdown		
☐	☐	Initial Startup		
☐	☐	Normal Operations		
☐	☐	Normal Shutdown		
☐	☐	Temporary Operations		
☐	☐	Turnaround Startup		

Pre S/U	Post S/U	Update Existing / Create New	Assigned To / Completed By	Date Completed
☐	☐	Will change effect S/D, S/U or bypass operations		
OPERATING LIMITS				
☐	☐	Operations Alarm Response		
☐	☐			
MAINTENANCE PROCEDURES/PROGRAMS				
☐	☐	Procedures Updated or Developed		
☐	☐			
GENERAL				
☒	☐	Blank List Updates/Change Flare/N2	Operations Kevin KK	5-2-18
☒	☐	Isolation/LOTO Plan	operations kevin KK	5-2-18
☐	☐	Unit Checklist/Log Sheets (Outside & Control) Updated		
☐	☐			

G. Training

Also review all outstanding items from previous PSRs and PHA.

Pre S/U	Post S/U	Update Existing / Create New	Assigned To / Completed By	Date Completed
☐	☐	Contractor Training		
☐	☐	HR Training Database Updated		
☐	☐	Maintenance Training		
☒	☐	Notification - operator to procedure control Pressure at TMV4 & LV	Kevin Kelly	5-9-18
☐	☐	Operations Training		
☐	☐	Training Manual/Drawings Updated		
☐	☐			

H. Pre-Startup Safety Review

Also review all outstanding items from previous PSRs and PHA.

NA

Pre S/U	Post S/U	Update Existing / Create New	Assigned To / Completed By	Date Completed
☐	☐	Equipment Service Contracts		
☐	☐	Extra Startup Manpower		
☐	☐	Inspection and Testing Complete		
☒	☐	Pre-Startup Walk-Through & Punchlist	TROY WITHERILL	5-10-18
☐	☐	Field Post-Startup Punch List & PSR 6 (for applicable projects)		
☐	☐			

J. Work Authorization

Also review all outstanding items from previous PSRs and PHA.

Pre S/U	Post S/U	Update Existing / Create New	Assigned To / Completed By	Date Completed
☐	☐	Blank Lists for Work		
☐	☐	Confined Space Entry		
☐	☐	Hot Tapping		
☐	☐	Hot Work		
☐	☐	Job Hazard Analysis (JSA/JSR)		
☐	☐	LOTO		
☒	☐	~~Permit will be appropriate Operations~~		

NA

K. Contractors

Also review all outstanding items from previous PSRs and PHA.

Pre S/U	Post S/U	Update Existing / Create New	Assigned To / Completed By	Date Completed
☒	☐	Contractor Communication/Notifications	Erin Ivanca/Evergreen	5-9-18
☐	☐	↳ Communication plan		

L. Safety & Emergency Planning and Response

NA

Also review all outstanding items from previous PSRs and PHA.

Pre S/U	Post S/U	Update Existing / Create New	Assigned To / Completed By	Date Completed
☐	☐	Emergency Response Drills/Training		
☐	☐	Emergency Response Plan (Integrated Contingency Plan - ICP)		
☐	☐	Fire Response Equipment & Inspection Records		
☐	☐	Pre-Fire Plans		
☐	☐	Safety Equipment (SCBA, Showers, PPE)		
☐	☐	Update changes to Safety Programs or Procedures		
☐	☐			

Section 3 APPROVAL TO INSTALL

Kevin Kelly — 5-2-18

~~Operations Manager~~ or Other Approving Authority: Area Supervisor — Date

Section 4 APPROVAL TO STARTUP (Follows PSR 5 Pre-Startup Safety Review)

Prior to filling out this, all Pre-Startup Action Items should be completed. Review PSR 5 and other previous PSRs.

Kevin Kelly — 5-10-18

~~Operations Manager~~ or Other Approving Authority: Area Supervisor — Date

Section 5 FINAL DOCUMENTATION COMPLETE

This section should not be filled in until all agreed-upon post startup activities should be completed.

Review Pre-startup documents and MOC open items from previous PSRs and PHA.

Before you sign off, consult with PSI baseline sheet accessible from H:MOC/PSI baseline.doc.

Change / Project Coordinator (Maintenance, Project or Process engineers, etc.) — Date

Asbestos Remediation Plan

2018 Superior Refinery Fire

Superior Refining Company LLC

Husky Superior Refinery, Superior, Wisconsin

Matthew G. Lazaric

(Wisconsin Asbestos License All-13341)

David Keller, CIH, CSP

Operations Section Chief _____ 5/4/18

Signature **Date**

Planning Section Chief _____ 4/4/18

Signature **Date**

Incident commander _____ 5/4/18

Signature **Date**

GHD | 11719 Hinson Road Suite 100 Little Rock, Arkansas 72212

11156937

Table of Contents

1. Introduction and Objectives

At the request of Superior Refining Company LLC (SRC), a subsidiary of Husky Energy, Inc. (Husky), GHD Services Inc. (GHD) will provide air monitoring and industrial hygiene (IH) support related to the 2018 Superior Refinery fire. The incident occurred at the SRC refinery (Site) located in Superior, Wisconsin. These services are provided to assist SRC with ensuring health and safety during cleanup and management of asbestos-containing materials or suspected asbestos-containing materials (collectively, ACM) that may be encountered during the incident and subsequent response and remediation efforts.

The purpose of this work plan is to implement a systematic assessment and recovery effort. This plan addresses proper ACM management during the response and remediation phases of the project. The specific objectives include the following:

- Prevent public or site worker exposure to ACM;
- Sample and document potential airborne asbestos exposures at the site perimeter during active asbestos cleanup / abatement;
- Identify and recover ACM external to the refinery fence line;
- Identify and recover damaged ACM within plant affected by the incident;
- Periodically observe cleanup activities to ensure proper cleanup and waste packaging methods are being utilized. Observe employee and equipment decontamination procedures; and
- Where safe and appropriate, sample materials suspected to contain asbestos. At this time, bulk sample collection is anticipated to be limited to sampling insulation that is remaining on fixed plant equipment including exchangers, drums, etc., that may be damaged and may require removal or repairs as overall plant repairs are conducted.

To accomplish the objectives outlined above, we propose the following activities:

- Ambient Air Sampling plan:
    a. During asbestos abatement monitoring, air samples will be collected along the perimeter of the asbestos abatement exclusion zone.
    b. The site asbestos abatement contractor (In-Line Construction or other Wisconsin-licensed asbestos abatement contractor) will collect personal samples from their employees that are performing abatement. GHD will receive and review all personal sample results.
    c. As appropriate, collect ongoing area samples surrounding the refinery.
    d. Analysis of air samples will be performed using phase contrast microscopy (PCM) with transmission electron microscopy (TEM) to be used as needed to clarify results.

- ACM Debris Survey
    a. As access is available to interior portions of the plant, identify locations for and coordinate placing asbestos warning / danger tape around locations of potential asbestos.
    b. Perform a limited visual asbestos survey of the fire affected and other damaged areas to determine areas that have ACM debris.
    c. Mark areas that have visible ACM debris.

- Damaged ACM Survey
    a. Where safe to do so, perform an asbestos survey of the fire affected and other damaged areas to determine equipment, piping, etc. that have ACM debris.
    b. As appropriate, collect bulk samples of suspect materials to confirm asbestos content so that the materials can be properly managed during the recovery.
    c. Mark on drawings, equipment, piping, etc. that has damaged ACM debris

GHD will continue air monitoring services until the project is completed and potential worker or community exposures to airborne asbestos fibers associated with the incident are eliminated or until directed by Husky that this service should be demobilized. The air monitoring data will be collected and compiled in accordance with established IH guidelines and practices. In addition, the results will be communicated to Husky, site workers, and regulatory agencies as required and/or as necessary to ensure the safety and health of potentially affected individuals.

2. Exposure Standards and Guidelines

The US Occupational Health and Safety Administration provides established exposure limits for a worker's exposure to hazardous chemical substances. Additionally, Threshold Limit values (TLVs) are established by the American Conference of Governmental Industrial Hygienists (ACGIH).

These are summarized below:

Analyte	OSHA PEL		ACGIH TLV	Units
	TWA	Excursion (30 minute exposure)	TWA[1]	
Asbestos	0.1 f/cc	1.0 f/cc	0.1 f/cc	Fibers per cubic centimeter of air.

2.1 Perimeter Exposure Monitoring Criteria

During asbestos abatement activities, work area perimeter air monitoring will be performed to ensure that engineering controls prevent the release of asbestos fibers from the work area. If ambient air samples exceed the accepted asbestos clearance criterion of 0.01 f/cc (AHERA standard for building re-occupancy), work will be halted and controls (wetting, covering or wrapping damaged materials, etc.) will be put in place. Work will not restart until work practices and/or engineering controls are modified to ensure perimeter concentrations do not exceed the clearance criterion.

2.2 Personal Air Monitoring and Bulk Sampling Methods

During asbestos abatement activities, OSHA methods ID160 (personal air monitoring) and ID191 (bulk sampling) will be followed. The collection of air monitoring samples will be completed using calibrated personal sampling pumps with 25-mm diameter cassettes with mixed-cellulose ester (MCE) filters and analyzed by PCM. All sampling results will be communicated to abatement personnel in compliance with applicable regulations.

3. Quality Assurance/Quality Control (QA/QC) and Reporting

Data collected will be stored in an on-site electronic archive. The monitoring/sampling data will be entered into an electronic database (spreadsheet or equivalent), and will undergo a quality assurance and quality control (QA/QC) review. Data entry forms and field notes will be kept on-site and retained for reference upon completion of the project. If necessary, full laboratory analysis data packages will be provided, and associated data validation processes will be arranged.

During the project, interim reporting of results may be required. This may include data summaries, maps, or other presentations of preliminary monitoring and sampling results. For example, a data summary will be provided to SRC every 24 hours, once data have undergone an initial QA/QC. Such reporting will be considered preliminary, as a final QA/QC of the data will not be complete. At the completion of the project, a report will be prepared in which data collected through monitoring and integrated sampling analyses will be compiled, summarized, and reported to SRC. Data contained in the final report will have been through the QA/QC process, will be reviewed by a Certified Industrial Hygienist (CIH), and will be considered final.

4. Asbestos Abatement / Cleanup Plan

There are several considerations for addressing damage to ACM during the recovery and repair operations to be conducted at and surrounding the plant. In order of importance, asbestos activities will be conducted to:

1. Address insulation that is off site or outside the refinery boundaries as a result of the incident. In instances observed to date, the insulation outside the refinery boundary or off refinery property is not suspect ACM. However, as a conservative response, insulation from the incident that is identified outside the refinery property will be collected for proper disposal.
2. Small-scale, short duration asbestos abatement activities needed to accommodate mechanical or process activities required to stabilize and de-energize refinery equipment and piping.
3. Large-scale cleanup of asbestos-containing debris, removal of asbestos-insulated equipment that is scheduled for demolition, removal and disposal of asphalt that may be contaminated with asbestos due to damage to mechanical equipment insulation.

4.1 Offsite / Extra-refinery Cleanup

Off-site cleanup of potential ACM debris from the refinery will be accomplished using the site embedded asbestos abatement contractor or other Wisconsin-licensed asbestos abatement contractor. The contractor will perform the cleanup of ACM primarily using manual methods.

As a conservative measure, materials identified offsite will be assumed to be ACM, and packaged and disposed of as such. Representative samples of collected materials will be taken for laboratory analysis to determine asbestos content. A general map will be generated to identify locations where debris has been located offsite.

Work methods and personal protective equipment (PPE) will be selected and utilized in accordance with existing regulations and based on the asbestos abatement contractor personnel exposure monitoring program records.

Should any pieces of metal that may be considered "evidence" be encountered during offsite insulation cleanup, the location will be recorded via GPS coordinates and Baker Engineering and Risk Consultants (BakerRisk) will be contacted to facilitate removal of evidence pursuant to the General Protocol for Identification and Collection of Evidence Items.

4.2 Small-Scale, Short Term Abatement

As may be required, and similar to routine maintenance, the operations and mechanical organizations will require limited scope asbestos abatement of mechanical equipment to accommodate the process of draining, de-energizing, and stabilizing the plant equipment. To accomplish this, the mechanical and process planners will coordinate directly with the abatement contractor to scope and schedule the smaller projects. This coordination will include measures (such as exclusion zones, barrier tape, and/or signage) to minimize the risk of exposure to non-abatement personnel.

The abatement contractor will make available adequate personnel to accommodate the limited abatement.

Abatement methods and techniques will vary and may include glovebag removal, mini enclosures, wrap and cut (whole pipe removal) or other methods as appropriate and as allowed by applicable regulations; provided, however that GHD will inform and receive consent from BakerRisk before removal of piping, process equipment, or structural components. All collected insulation materials will be packaged and disposed as ACM.

Should any pieces of metal that may be considered "evidence" be encountered during offsite insulation cleanup, the location will be recorded via GPS coordinates and Baker Engineering and Risk Consultants (BakerRisk) will be contacted to facilitate removal of evidence pursuant to the General Protocol for Identification and Collection of Evidence Items.

Decontamination procedures following abatement may vary from standard abatement decontamination. Decontamination facilities typical for asbestos abatement (multiple stage structures with showers) will be available and will be utilized. It may be necessary to perform additional decontamination steps to address the presence of asphalt throughout the work areas. The need for additional decontamination steps will be determined prior to the start of any individual project and any decontamination procedure outside the routine change and shower asbestos procedure will be performed with the assistance of SRC personnel and facilities.

4.3 General Asbestos Abatement and Site Cleanup

Once the site has been stabilized and equipment has been drained and de-energized, general site abatement and cleanup will commence. To the extent practicable, ACM that can be removed will be removed prior to conducting demolition activities that may disturb ACM. If limited demolition activities are required to gain access for ACM to be removed, work will be done in such a manner to minimize the risk of exposure. The work will include measures (such as exclusion zones, barrier tape, and/or signage) to minimize the risk of exposure to non-abatement personnel.

The cleanup methods to be utilized will, to some extent, be determined by successful methods that were developed during the work performed in previous remedial work phases. Those methods may include glovebag, enclosure removal, and alternative methods approved by the Wisconsin Department of Natural Resources. Large-scale removal of asphalt will require the use of heavy equipment. All collected insulation materials will be packaged and disposed as asbestos-containing materials.

Personal decontamination procedures following abatement may vary from standard abatement decontamination, but will generally following decontamination procedures accordance with 29 CFR 1910.120 (k). Decontamination facilities typical of asbestos abatement (multiple stage structures with showers) will be available and will be utilized. It may be necessary to perform additional decontamination steps to address the presence of asphalt throughout the work areas. The need for additional decontamination steps will be determined prior to the start of any individual project and any decontamination procedure outside the routine change and shower asbestos procedure will be performed with the assistance of Husky personnel and facilities.

Decontamination measures will be implemented to prevent contaminant tracking on and off Site. Vehicles, equipment, and workers leaving areas of potential contamination will exit through a Decontamination Reduction Zone (DRZ) prior to entry into Clean Zones from the Exclusions Zones. The DRZ will contain an equipment decontamination pad to accommodate the largest piece of on Site potentially contaminated equipment. The decontamination pad will be formed with a bed and berm, overlain by one layer of high-density polyethylene sloping toward a sump. The DRZ will provide, operate, and maintain portable, high pressure, wash units. The DRZ will maintain necessary equipment, pumps, and piping required to collect and contain equipment decontamination wastewater and sediment and transfer same to approved storage facilities. Decontamination facilities and work activities will be sequenced to prevent contaminant tracking

CTEH CENTER FOR TOXICOLOGY AND ENVIRONMENTAL HEALTH, LLC

Dilineation of Asbestos-Affected Area for Benzout Unit De-Inventory

To: Bobby Breed, SRS

Cc: NA

From: Scott Skelton, MS, CIH

Date: May 9, 2018

Re: Awareness map for asbestos affected areas during Benzout Unit De-Inventory

---

This memo is intended to inform regarding the outcome of the asbestos assessment and delineation conducted to support worker health and safety pertaining to the *Benzene & Benzout Liquid De-Inventory Procedure: When Normal Shutdown is Interrupted* (plan date, 5-9-2018).

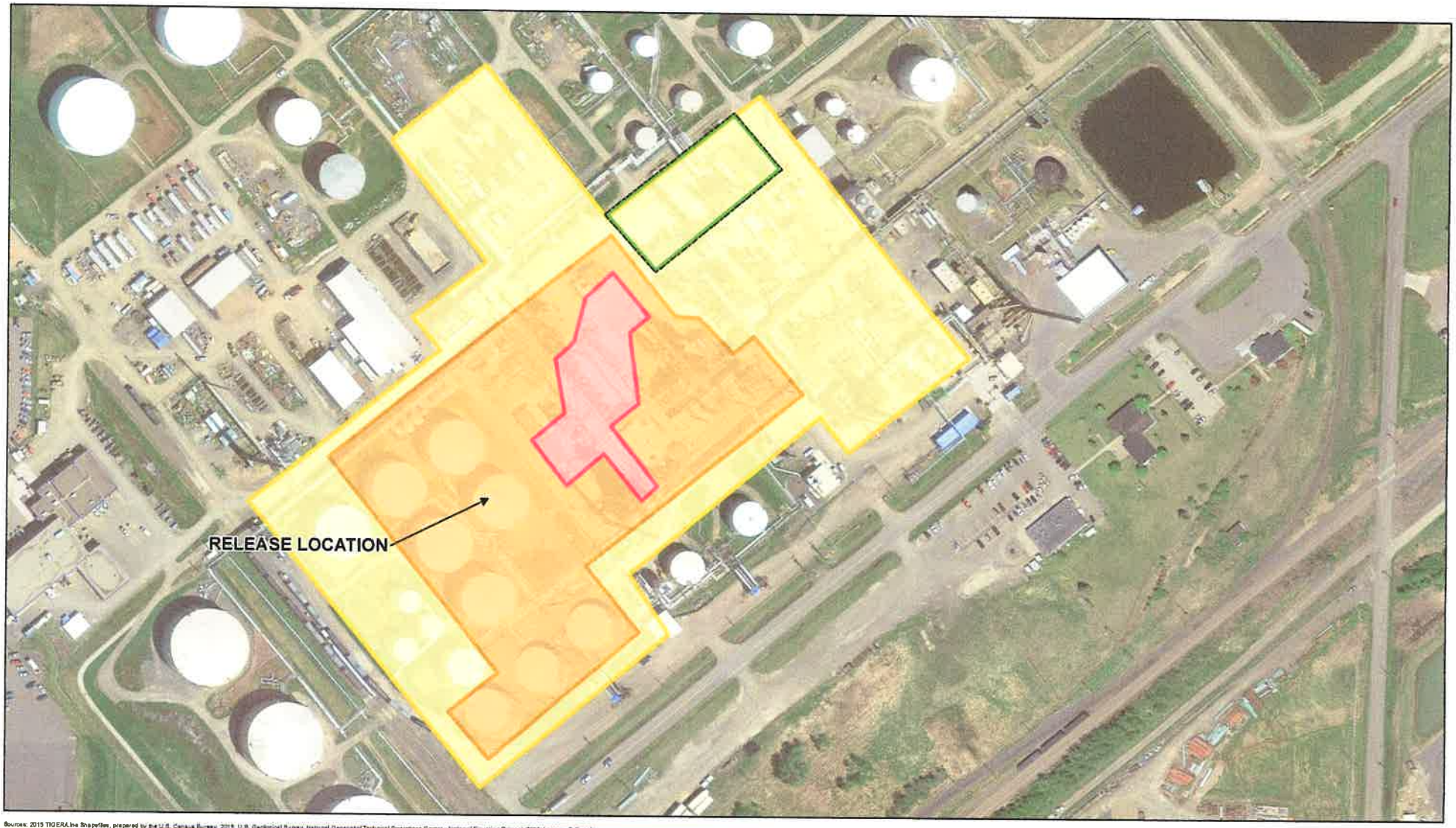
On Tuesday May 8th, a comprehensive asbestos hazard assessment was performed to determine presence/absence of asbestos in the footprint area and areas immediately adjacent to the proposed Vapor Combustion Unit (VCU) staging location. Representatives from Husky North America, GHD Consultants, and In-Line Contracting assessed the proposed VCU staging area and determined that no ACM was present within a boundary demarcated by a green line visible in the attached map, titled: *GHD Asbestos Visual Inspection, Figure 1* (dated: May 8, 2018).

The May 8th assessment is consistent with the provisions described in the Operations Safety Plan regarding asbestos assessment and delineation for safe work activity during de-inventory activity limited to the *Benzene & Benzout Liquid De-Inventory Procedure: When Normal Shutdown is Interrupted* (plan date, 5-9-2018).

Thank you,

Scott Skelton, MS, CIH
Senior IH/ER Consultant

Privileged and Confidential – Prepared at the Request of Counsel



Sources: 2015 TIGER/Line Shapefiles, prepared by the U.S. Census Bureau, 2015; U.S. Geological Survey, National Geospatial Technical Operations Center - National Elevation Dataset, 2015; Imagery © Google.

0 100 200
Feet

Coordinate System:
NAD 1983 HARN StatePlane
Wisconsin North FIPS 4801 Feet

N

Legend

- Visual Inspection Indicates that no ACM present - Level D PPE Required
- Source Zone
- Hot Zone
- Warm Zone

GIS File: Q:\GIS\PROJECTS\11134000s\11156937\Layouts\PRES008\11156937-00(PRES008)GIS-WA002.mxd

GHD

HUSKY ENERGY – SUPERIOR REFINERY FIRE
SUPERIOR, WISCONSIN

PRIVILEGED & CONFIDENTIAL

11156937-00
May 8, 2018

ASBESTOS VISUAL INSPECTION

FIGURE 1

Erin Ivanca

From: Bill Demchuk
Sent: Tuesday, May 8, 2018 1:40 PM
To: Kara Bihn; Erin Ivanca; Troy Witherill
Cc: Timothy Thom
Subject: RE: Benzout/Benzene Splitter Clearance for Deinventory

Hi Kara,
Yes you are able to commence with the stated work, I have taken the phots and you are good to go.

Thank you
Bill Demchuk
Corporate Incident Management Specialist
Calgary
Office 587-774-5719
Cell 403-702-5724

From: Kara Bihn
Sent: Tuesday, May 8, 2018 1:21 PM
To: Bill Demchuk <Bill.Demchuk@huskyenergy.com>; Erin Ivanca <Erin.Ivanca@huskyenergy.com>; Troy Witherill <Troy.Witherill@huskyenergy.com>
Cc: Timothy Thom <Timothy.Thom@huskyenergy.com>
Subject: Benzout/Benzene Splitter Clearance for Deinventory

Hello Bill,

Would like to confirm that the Benzout and Benzene splitter units are clear for deinventory from the CSB and Baker Risk stand point per our walkthrough earlier today.

Thank you,
Kara M Bihn
Process Engineer
Lima Refining Company
W 1.419.226.2375
Husky Energy

05/04/2018


05/04/2018